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# **Expenditure on Gross Domestic Product: Sources and Methods**

## **Enquiries**

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## 1. Introduction

Statistics South Africa (Stats SA) is the official producer of social, economic and environmental statistics, as prescribed by the Statistics Act of 1999.

This document serves as general information to the public on how the expenditure-based gross domestic product (GDP) is compiled by Stats SA. The sources and methods described herein apply to the period 2010 to date. Previous estimates of GDP (E) were compiled by the South African Reserve Bank (SARB), using different quarterly and annual sources and methods. With relevant regulatory authority, there are a number of cases where source data are published by other public sector entities; and by agencies in the public or private sector, in cases where no official statistics are available.

Although the expenditure on gross domestic product described in this document is an official statistic, the official estimate of GDP is derived from the production approach. These two estimates are not exactly the same, and the difference is known as the statistical discrepancy in the GDP. This applies to GDP in both nominal terms (current prices) and real terms (constant prices).

For detailed information on how the published estimates are put together, users are requested to contact Stats SA's National Accounts division on (012) 310 2951. As both sources and methods are bound to change over time in the light of progress in the availability of basic data, this document will be updated from time to time as required by improvements in the way GDP is estimated.

## 2. Source data

National accounting estimates are very seldom the result of direct measurement. Some data are derived from statistical inquiries, as is the case with sample surveys and censuses of business activity. Other basic information is derived from the administration of taxes and duties by the South African Revenue Service (SARS). For example, information derived from excise taxes is used to estimate the annual expenditure of households on alcoholic beverages and tobacco.

The use of official source data is preferred due to a number of compelling reasons, even when there are competing data produced by other sources: the methods involved are subject to public scrutiny, they are conceptually comparable to similar data available in other countries, and there are generally accepted processes to certify them as fit for purpose. However, where official data are available late, or are not available with the desired frequency, do not have the right coverage, or where concepts are at odds with what is specifically demanded for compatibility with the national accounting framework, various adjustments have to be made. The various cases are discussed below:

- **Source data available late.** The results of the Quarterly Financial Statistics (QFS) survey<sup>1</sup>, used in the estimation of certain indicators of gross fixed capital formation (GFCF), changes in inventories, and household final consumption expenditure (HFCE), are available too late for inclusion in the quarterly estimates to which they refer. Accordingly, the first GDP (E) estimates reflect preliminary QFS data and are revised in the following quarter when the final results become available. While the current practice is to assume that late data behave the same way as data submitted earlier in the quarterly cycle, a close monitoring of revisions serves to test whether this belief is warranted.

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<sup>1</sup> The QFS is a quarterly sample survey which collects a range of financial statistics in respect of enterprises in the formal business sector of the South African economy, excluding agriculture, hunting, forestry and fishing and financial intermediation and insurance and government institutions.

- **Compatible concept but insufficient frequency:** The Income and Expenditure Survey (IES) is a household-based survey conducted by Stats SA. It captures information on household consumption expenditure patterns using a combination of diary-entry and recall methods on the part of the respondent. Results from the IES would be suited for HFCE compilation; although the survey is subject to incomplete coverage and response bias. However, the IES is only conducted every four to five years. Because of the lengthy interval between surveys, the IES is only employed as a comparison source for annual HFCE estimates.
- **Incompatible concepts:** Value added tax (VAT) is excluded in the source data for motor trades. As HFCE is measured VAT inclusive, VAT is added onto the source data for motor vehicles to estimate household consumption expenditure on motor vehicles.
- **Unavailability of source data.** Certain components of HFCE are only available annually. This is especially the case for such services as provided by hairdressing salons and personal grooming establishments<sup>2</sup>. But because of their limited weight they have a minimal impact on totals, and can be estimated at quarterly intervals by means of a straight line trend.

The SARB was responsible for the compilation of expenditure on GDP [GDP (E)] from the 1940s to early 2016. SARB, as the regulatory authority of the financial sector, ensured complete and rigorous collection of business reports for the financial sector. In many other cases, official Stats SA data series were used to compile components of the national accounts. For some other series, however, no sources, either official or informal, were available. Where official data were not available, the SARB's statistical unit had to rely on estimates based on indirect indicators or simply on professional judgement. Several of the components currently estimated in GDP (E) (for example, estimates underlying GFCF for intellectual property products of private enterprises) are still compiled using SARB quarterly estimates due to the unavailability of official data. SARB data will be used until they can be replaced with

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<sup>2</sup> Although both the Quarterly Financial Statistics survey and SARS (VAT data) have data on sales of hairdressing services by establishments, these data are very volatile and appear to have low coverage. Until such time as improvements are made to the quality of these data, quarterly estimates are derived by an estimated trend.

estimates derived from official basic statistics. It is Stats SA's intention to launch a supplementary collection programme for these data in the near future.

### 3. Components of expenditure-based GDP

#### 3.1 Household final consumption expenditure (HFCE)

##### 3.1.1. Introduction

HFCE forms the largest part of quarterly GDP (E) at 61,0 per cent<sup>3</sup>. It consists of expenditure incurred by resident households on consumption goods and services (SNA, 2008, 9.56), regardless of where such expenditure occurs. Thus, payments made by residents while travelling or studying abroad (other than business related expenditures) are included in HFCE, while those made by foreigners within the borders of South Africa are excluded<sup>4</sup>.

**Along with consumption of goods and services, HFCE also includes the following:**

- a. **Owner occupied housing.** Individuals living in dwellings which they own are deemed to be providing housing services to themselves. As a result, imputed expenditure on such services (termed imputed rent) is included in HFCE. In 2014, this series accounted for 8,9 per cent of HFCE in current prices.
- b. **Expenditure on financial intermediation, the service charge component of premiums on insurance and the cost of services provided by pension funds.** In 2014, this expenditure accounted for 6,9 per cent of HFCE in current prices.
- c. **Own-account production of goods,** including agricultural products produced and consumed by the same household.
- d. **Minor repairs and maintenance to the dwelling,** including purchases of materials used in the process. Fees charged by builders, carpenters, electricians etc. are also included.

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<sup>3</sup> Share of 2014 GDP (E) at current prices.

<sup>4</sup> Expenditures by foreign tourists and business travellers while in South Africa are included in the balance of payment's current account, forming part of exports of goods and services. Expenditure by South African residents while abroad is included in imports of goods and services.

The two last inclusions are very small and difficult to isolate from other household expenses.

Excluded from HFCE is any business expenditure by households on behalf of unincorporated enterprises which they own. In addition, the following items are also excluded:

- a. **Expenditure on fixed or non-financial assets such as dwellings, as well as expenditure on major improvements to land and dwellings.** These are excluded as they form part of gross fixed capital formation (GFCF).
- b. **Valuables.** These are usually acquired as a store of value but are excluded from HFCE. They are included in production-based GDP, and included in the expenditure accounts according to the institutional sector that purchased them. They are recorded as GFCF if they are produced within the current period and only if their value is above a certain threshold.

### 3.1.2. Composition of HFCE

HFCE is classified by purpose using the Classification of Individual Consumption according to Purpose (COICOP), developed by the United Nations<sup>5</sup>. Consumer price indices (CPIs), used to deflate HFCE, are also classified according to COICOP. Currently, 94 commodities and services are estimated, based on the 3-digit COICOP level. These in turn are grouped and published according to the 1-digit COICOP level. Selected HFCE components and their magnitudes are listed in Table 3.1.1 below, providing an example of the structure used.

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<sup>5</sup> HFCE is also classified by durability, according to the following broad groups: durable goods, semi-durable goods, non-durable goods, and services.

**Table 3.1.1: Selected HFCE by COICOP division, current prices (R billion)**

COICOP division, 2-digit level	2011	2012	2013	2014	Weight*
Food	322,6	361,9	386,6	418,2	18,3
Imputed rentals for housing	143,0	150,9	159,1	168,4	7,4
Fuels and lubricants for personal	88,2	105,1	117,1	117,0	5,1
Motor cars	76,7	86,8	95,1	100,8	4,4
Clothing	64,6	69,9	77,0	83,7	3,7
<b>Household Final Consumption</b>	<b>1 801,1</b>	<b>1 983,6</b>	<b>2 144,2</b>	<b>2 283,4</b>	
<b>Gross Domestic Product</b>	<b>3 020,3</b>	<b>3 244,8</b>	<b>3 538,7</b>	<b>3 796,8</b>	
<b>Share of HFCE in GDP (%)</b>	<b>59,6</b>	<b>61,1</b>	<b>60,6</b>	<b>60,1</b>	

\*Component to total HFCE, based on 2014, current-price values.

### 3.1.3. Overview of source data

The majority of the source data used in the compilation of quarterly and annual current price HFCE estimates originates from statistical surveys conducted by Stats SA (See Table 3.1.3 for a list and descriptions of the surveys in question). Currently, HFCE estimates are measured from the supply-side. The data sources include the Retail Trade Sales (RTS) and Motor Trade Sales (MTS) surveys, which are available on a monthly basis; the QFS surveys of the formal business sector, the QFS survey of municipalities, and the annual Large Sample Survey (LSS) of the retail trade industry. The LSS of the retail trade industry and the monthly RTS provide information on the majority of the retail trade commodities<sup>6</sup>.

Ideally, current price HFCE estimates ought to be compiled using a household-based survey, such as the IES, conducted by Stats SA. The IES collects information on household consumption expenditure patterns, on a four to five yearly rotation. Its low frequency makes it unusable for annual benchmarking purposes. In addition, households tend to under-report certain expenditures, especially those related to the consumption of alcoholic beverages and tobacco. This in turn requires adjustments so as to accurately reflect consumption expenditure patterns.

<sup>6</sup> Commodities here refer to a group of goods and services.

Table 3.1.2 below provides weights<sup>7</sup> by COICOP division from the LSSs of 2005 and 2009, and the IES 2005/2006 and 2010/2011 reference years. With the exception of the food, beverages and tobacco category in both reference years (with differences of about 10 percentage points of one another), the weights between the two surveys are within 5 to 7 percentage points of one another. IES weights for specific commodities like food, beverages and tobacco are expected to be higher, as they include expenditures by households in the informal sector.

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<sup>7</sup> *Commodity weights, which refer to the relative importance of a good or service within a basket of goods and services, are calculated as their proportion of the total; the LSS weights are used to derive HFCE on retail commodities.*

Table 3.1.2: Weight of goods by IES (COICOP) 2005/2006, 2010/2011 and LSS by product groupings 2005, 2009*				
Goods group	IES 2005/2006* (%)	LSS 2005* (%)	IES 2010/2011* (%)	LSS 2009* (%)
Food, beverages and tobacco	48	41	50	41
Eyewear, pharmaceuticals, surgical and medical goods, cosmetics and toiletries	6	11	7	8
Textiles, clothing, accessories and footwear	15	15	16	15
Household furniture, appliances, equipment, articles and supplies	15	12	9	12
Hardware, building materials, paint and glass	2	9	5	8
Sports and recreational goods, reading materials and stationery, computers, software, photographic materials and related items	13	9	11	8
Watches, clocks and jewellery	1	1	1	1
Other goods	1	3	1	6

\* Based on expenditure and current-price sales of goods respectively over total expenditure and total sales of goods. Totals may not add up to 100% due to rounding.

Table 3.1.3 below lists the source data utilised for quarterly and annual HFCE estimation.

Table 3.1.3: Details of data sources used in estimating HFCE				
Component	Relative importance of component (%) <sup>8</sup>	Indicator variable & unit of measurement	Current price series	
			Quarterly	Annual
Retail trade commodities	34,5	Retail trade sales at current prices R million	<b>Statistics South Africa</b> <b>P6242.1</b> – Retail Trade Sales (RTS) survey	Sum of four quarters
		Goods weights derived from LSS per store-type Percentage	<b>P6201</b> – Large Sample Survey (LSS) Retail Trade Industry	
Alcoholic beverages and tobacco	4,2		No quarterly indicator exists. Quarterly estimates are inter-and-extrapolated using annual excise duties and taxes data from SARS	<b>South African Revenue Service</b>
Purchase and operation of vehicles	11,9	Sales of new motor vehicles at current prices R million	<b>Statistics South Africa</b> <b>P6343.2</b> – Motor Trade Sales (MTS) survey	Sum of four quarters and AFS
		Sales of new motor vehicles by sales channel and type <sup>9</sup> R million	<b>National Association of Automobile Manufacturers of South Africa (NAAMSA)</b> <sup>10</sup>	
		Number of new vehicle registrations	<b>Electronic National Traffic Information System (eNaTIS)</b>	
		Used car margins: Sales of goods, opening and closing inventories, and purchases for SIC 63122 at current prices - R'000	<b>Statistics South Africa</b> <b>P0021</b> – Annual Financial Statistics (AFS)	

<sup>8</sup> Based on 2014 current price expenditure-based GDP estimates

<sup>9</sup> The market channel consists of dealer, government, rental, export and single unit channels; types of vehicles include buses, heavy commercial, light commercial, medium commercial, passenger and extra heavy commercial vehicles.

<sup>10</sup> See also paragraph iii on page 15.

Table 3.1.3: Details of data sources used in estimating HFCE				
Component	Relative importance of component (%) <sup>8</sup>	Indicator variable & unit of measurement	Current price series	
			Quarterly	Annual
<b>Electricity, water supply, miscellaneous services relating to the dwelling</b>	3,7	Sales of water, sewerage and sanitation and refuse and removal charges at current prices R'000	<b>Statistics South Africa</b> <b>P9110</b> – Quarterly Financial Statistics (QFS) of Municipalities	<b>P9114</b> - Financial Census of Municipalities
<b>Actual and imputed rentals for housing</b>	8,9	Stock of residential housing <sup>11</sup> (i.e. buildings) at constant prices used as quarterly indicator of constant price actual and imputed rentals. R million  Proportions of actual and imputed rent to total rent based on 2010 current price SARB benchmarks, to calculate quarterly constant price estimates. Quarterly current price estimates are calculated by inflating the constant price quarterly estimates with the CPIs for actual and imputed rent.	<b>South African Reserve Bank</b> National Accounts division  <b>Statistics South Africa</b> National Accounts division Supply and Use Tables (SUTs)	Sum of four quarters
<b>Insurance, FISIM and financial services n.e.c., Travel receipts and payments</b>	12,6	Paid and imputed service charges, Balance of Payments (BOP) travel receipts and payments at current prices R million	<b>South African Reserve Bank</b> National Accounts and Balance of Payments divisions	SARB annual values
<b>Domestic and household services</b>	2,1	Number of employees Thousands Current price levels are derived using the number of employees and CPI for domestic wages.	<b>Statistics South Africa</b> <b>P0211</b> – Quarterly Labour Force Survey (QLFS) <b>P0141</b> – Consumer Price Index	Sum of four quarters

<sup>11</sup> Stock of residential housing is estimated by SARB from selected building statistics of private sector reported by local government institutions.

Table 3.1.3: Details of data sources used in estimating HFCE				
Component	Relative importance of component (%) <sup>8</sup>	Indicator variable & unit of measurement	Current price series	
			Quarterly	Annual
Outpatient and hospital services, passenger transport by air, telephone and telefax services, recreational and cultural services, and package holidays	8,2	Turnover for SIC 7300, 7414, 7512, 7520, 931, 9320 and 96 at current prices R'000	<b>Statistics South Africa P0044</b> – Quarterly Financial Statistics (QFS) survey	Outpatient and hospital services <b>Council of Medical Schemes</b>  Passenger transport by air <b>P0021</b> – Annual Financial Statistics (AFS) survey  Telephone and telefax services <b>P0021</b> – Annual Financial Statistics (AFS) survey  Recreational and cultural services, and package holidays Sum of four quarters
Games of chance	1,0	Net losses by households at current prices R million	<b>National Gambling Board</b> Gross gambling revenue <sup>12</sup> <a href="http://www.ngb.org.za">www.ngb.org.za</a>	Sum of four quarters
Postal services	< ½ of 1.0 %	Number of postage items handled Thousands  Current estimates are calculated by using the CPI for postal services	<b>South African Post Office (SAPO)</b>  <b>Statistics South Africa P0141</b> – Consumer Price Index	Sum of four quarters
Passenger transport by railway and road	3,5	Turnover from road and rail passenger transportation at current prices R million	<b>Statistics South Africa P7162</b> - Land Transport Survey (LTS)	Sum of four quarters

<sup>12</sup> This value is net of winnings paid out to households.

Table 3.1.3: Details of data sources used in estimating HFCE				
Component	Relative importance of component (%) <sup>8</sup>	Indicator variable & unit of measurement	Current price series	
			Quarterly	Annual
Primary and secondary education	1,8	Number of school learners Thousands	<b>Department of Basic Education (DBE)</b> Education Statistics in South Africa survey  No quarterly data are available. Quarterly estimates are interpolated from annual data from the DBE, which are inflated to derive quarterly current estimates	<b>Department of Basic Education</b>
Tertiary education	1,3	Income from tertiary education fees at current prices R million	No quarterly data are available. Annual data are instead interpolated to derive quarterly estimates at current prices	<b>Statistics South Africa P9103.1</b> – Financial Statistics of Higher Education Institutions
Restaurants and hotels	2,4	Income from preparation of meals and drinks for immediate consumption at current prices R millions  Income from tourist accommodation at current prices R million	<i>Restaurant services</i> <b>Statistics South Africa P6420</b> – Food and Beverages survey  <i>Hotel services</i> <b>P6410</b> – Tourist Accommodation survey	Sum of four quarters
Other goods and services	4,0	HFCE on other goods and services at current prices R million	<b>South African Reserve Bank</b> No quarterly data are available. Annual data are instead interpolated to derive quarterly estimates at current prices	South African Reserve Bank annual data

**General note on total receipts, including the income indicator variable:**

The total receipts indicators used include sales made to households, the government sector as well as the business sector. To obtain HFCE estimates, household proportions are applied to the totals.

Annual source data are used to support the estimation of quarterly indicators, particularly where the quarterly data sources are not sufficiently robust. Although annual data sources often have a lag, they are an important source in the estimation process, given their comprehensiveness and accuracy. Annual sources are used in the estimation of a number of quarterly indicators, for example, in the estimation of HFCE on education. Furthermore, these data sources are also used in the benchmarking of quarterly indicators; thus ensuring alignment between the quarterly and annual records.

Source data for HFCE are divided into 2 groups: source data used to estimate final consumption expenditure on goods and source data used to estimate final consumption expenditure on services. Within each group, further distinction and groupings are made, based on goods or services that use a similar source of data.

## **a. Goods**

### **i. Retail trade goods**

The monthly RTS (P6242.1) and the RTS LSS (P6201) are used to estimate the majority of the consumption goods<sup>13</sup> within HFCE, termed 'Retail trade commodities'. These supply-side sample surveys, conducted by Stats SA, provide data for the compilation of national accounts. Sampled enterprises sell goods and services to final consumers including households and governments and also to businesses.

The monthly RTS collects revenue by store-type, but not by type of goods. Since goods' weights by store-type are required<sup>14</sup>, they are derived from the LSS, as sales of enterprises in the retail trade sector are collected by groups of goods in this survey<sup>15</sup>. Weights calculated from the LSS can then be applied to store-type sales from the monthly RTS<sup>16</sup>.

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<sup>13</sup> There are approximately 40 commodity types.

<sup>14</sup> Commodity data are required for both analytical and for deflation purposes. Price indices (e.g. CPIs) are collected at the commodity level and not by store-type.

<sup>15</sup> Supply-side surveys of retail trade have at least two advantages. There are much fewer enterprises in number than there are households, which allows for easier collection and follow-up queries. In addition, there is no evidence of persistently underestimating the total value of sales by enterprises. However, the supply-side surveys are not without their limitations. Supply-side surveys do not

## ii. Alcohol beverages and tobacco

The monthly RTS (P6242.1) and annual excise duties and taxes data from SARS are used to estimate HFCE on alcoholic beverages and tobacco. The quarterly estimates are interpolated by applying weights obtained from the RTS, while the excise duties and taxes data are used as the annual benchmark values.

## iii. Purchase and operation of vehicles

The MTS survey (P6343.2) is a Stats SA monthly survey of enterprises in the motor trade industry (including vehicle dealers, filling stations and repair workshops). The sales variables from this data source are used in the estimation of household expenditure on the purchase and operation of vehicles. Additional sources are also used in the compilation of HFCE on new and used motor vehicles. These are: new vehicle sales provided by the National Association of Automobile Manufacturers of South Africa (NAAMSA), new vehicle registrations provided by the Electronic National Administration Traffic Information System (eNaTIS), and dealer margins derived from the QFS.

## b. Services

### i. Electricity, water supply, miscellaneous services relating to the dwelling

Electricity, water supply and municipal services estimates are provided by the QFS of Municipalities (P9110). The QFS of Municipalities is a quarterly survey that covers local, district and metropolitan municipalities in South Africa. This survey covers quarterly financial information of all 278 municipalities<sup>17</sup>. The sales variables are used to estimate expenditure on these services.

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*include sales in the informal sector or non-store sales to households. Further, sales cannot be separated into sales to household and sales to the rest of the economy.*

<sup>16</sup> *Differences in store-type weights between the monthly RTS and LSS are generally within 5 percentage points, although a reconciliation process between the two has not yet been undertaken.*

<sup>17</sup> *The survey is designed to obtain financial information of local government institutions relating to: the Consolidated Statement of Financial Position of Municipalities; the Consolidated Statement of*

## **ii. Actual and imputed rentals for housing**

The constant price stock of residential buildings compiled by the SARB is the basis for the estimation of actual and imputed rentals, with 2010 as its base year. The current price estimates are compiled using the CPI of actual rent and CPI of imputed rent, as well as annual current price actual rent and imputed rent proportions to total rent from the supply and use tables.

## **iii. Insurance, FISIM, financial services n.e.c., travel receipts and payments**

The SARB also provides estimates on insurance, financial intermediation services indirectly measured (FISIM)<sup>18</sup> and other financial services based on quarterly surveys conducted among various institutions in the financial sector. Travel receipts and payments data are also estimated as part of the SARB's work on South Africa's balance of payments.

## **iv. Domestic and household services**

The volume indicator for domestic and household services is obtained from the Quarterly Labour Force Survey (QLFS) (P0211). The QLFS is a household-based survey conducted by Stats SA on a quarterly basis. Among other objectives, the QLFS collects data on the number of employees employed by the private household sector. This data series, along with the CPI for domestic wages, is used in the compilation of domestic and household services.

## **v. Outpatient and hospital services, recreational and cultural services, and package holidays**

The turnover from the sales of services variable from the QFS of the formal business sector is used in the estimation of a number of services. These include medical, recreational and cultural services as well as package holidays (SIC 931, SIC96 and SIC7414, respectively).

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*Financial Performance of Municipalities – Rates and General Services; and the Consolidated Statement of Financial Performance of Municipalities – Housing and Trading Services.*

<sup>18</sup>FISIM is the implicit financial service fee arising from the process whereby a financial institution, such as a bank, accepts deposits from investors wishing to receive interest on their funds, and lends these funds to entities wishing to acquire loans. The bank, acting as a financial intermediary, manages the flow of funds between the two entities. The entity or person depositing the funds accepts a rate of interest lower than that paid by the borrower. Between these two interest rates stands a 'reference rate' of interest. The difference between the reference interest rate applied to the levels of loans and deposits and the interest actually paid to depositors and charged to borrowers is known as FISIM.

**vi. Postal services**

Postal services comprise both postal and courier activities. SAPO has a dominant market share in postal activities (approximately 99%). Since a significant portion of SAPO's revenue is generated from its postal activities, the number of postage items handled is the indicator of the relevant volume measure. The CPI in turn is used to derive constant price estimates.

**vii. Games of chance**

Expenditure on games of chance is measured by the net surplus of gambling activities from lotteries, casinos and other gambling establishments, gaming machines and other designated areas such as bingo halls. Net surplus is defined as the difference between the amounts paid for lottery tickets or placed in bets and the amounts paid out to winners.

**viii. Telephone and telefax services**

The turnover variable from the QFS of the formal business sector survey (P0044) – SIC 7520- is used to estimate expenditure on telephone and telefax services.

**ix. Passenger transport by railway and road services**

The Land Transport Survey (LTS) (P7162) is a monthly sample survey conducted by Stats SA, which covers enterprises engaged in passenger and freight transportation services. The variable income is used to measure expenditure on transportation by railway and road.

**x. Air transportation services**

The QFS of the formal business sector survey (P0044) is used to calculate estimates of expenditure on air transportation services, using the turnover variable.

**xi. Education****a. Primary and secondary education**

“Education Statistics in South Africa” is an annual census conducted by the Department of Basic Education. The main purpose of this annual census is to help education policy planning and implementation on a provincial and national level. For HFCE estimation purposes, the number of learners in South African schools is the

indicator chosen. Annual SUT values of primary and secondary education, along with the CPI for both these education levels, are also used in the estimations.

## **b. Tertiary education**

The Financial Statistics of Higher Education Institutions (P9103.1) is a Stats SA census of higher education institutions in South Africa. The value of income from education fees is used for the compilation of expenditure on tertiary education.

## **xii. Restaurants and hotels**

The Food and Beverages (P6420) and Tourist Accommodation (P6410) surveys are used in estimating expenditures on catering and accommodation services. The surveys cover both public and private enterprises. P6420 covers enterprises involved in the preparation of meals and drinks for immediate consumption, while P6410 covers short-stay accommodation in South Africa. Incomes from these activities are used in the estimates of HFCE on restaurant and hotel services.

## **xiii. Other goods and services**

Estimates for expenditure on some of the goods and services are derived by linear trend, using the relevant annual benchmarks, due to a lack of suitable quarterly data sources for these services<sup>19</sup>.

### **3.1.4. Estimation methods**

#### **3.1.4.1 Current price estimation**

Most current price quarterly series for HFCE are estimated from value data. Where value data are not available, separate information on prices and quantities is required. For instance, estimates of HFCE on domestic and household services are calculated from the number of individuals employed and quarterly average wages of domestic workers. Furthermore, some data require adjustment prior to usage, to ensure compliance with the national accounts framework, while other data are used without further adjustments. This section discusses only those data which require

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<sup>19</sup> These include the following: narcotics, cleaning, repair and hire of clothing, repair and hire of footwear, other services relating to the dwelling n.e.c, repair of furniture, furnishings and floor coverings, repair of household appliances, animal drawn vehicles, other services in respect of personal transport services, passenger transport by sea and inland waterway, other purchased transport services, repair of audio-visual, photographic and information processing equipment, maintenance and repair of other major durables for recreation and culture, veterinary and other services for pets, education not definable by level, hairdressing salons and personal grooming establishments, prostitution, social protection and other services n.e.c.

adjustments prior to usage. As such, the quarterly source data for HFCE estimation are divided into these two broad groups (*See Appendix 3 for a list of components that require minimal or no adjustments*).

An example of source data used without further adjustments in HFCE estimation is the growth rate of sales made to households. With the exception of sales of motor vehicles to households, it is assumed that all sales made to households grow at the same rate as the sales made to businesses and government; as reported and captured in supply-side surveys such as the QFS and the monthly RTS. However, once the HFCE estimates have been included in the annual SUT process, a differentiation between purchases made by households and other institutional sectors is made. Unless otherwise stated, all HFCE estimates are in purchaser prices.

#### **a. Retail trade commodities**

HFCE on retail trade commodities is currently estimated using monthly sales data by store-type from the monthly RTS<sup>20</sup>. The goods weights from the LSS, which show the percentage sold of each good per store-type, are used in combination with the monthly RTS information to obtain detailed expenditure estimates by good. Goods weights are extrapolated between the data points provided by the LSS.

#### **b. New vehicles and motorcycles**

New vehicle sales from the MTS form the basis for estimates of sales of new vehicles and motorcycles. Sales of motorcycles are separated from the aggregate vehicle sales by using SARB annual proportions. This is a temporary source as there are plans to use data provided by the Association of Motorcycle Importers and Distributors to calculate this proportion.

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<sup>20</sup> *The monthly RTS defines store-types as follows: 6211 (Non-specialised stores with food, beverages and tobacco predominating); 6219 (Other non-specialised stores); 6220 (Retailers of food, beverages and tobacco in specialised stores); 6231 (Retailers in pharmaceutical and medical goods, cosmetics and toiletries); 6232 (Retailers in textiles, clothing, footwear and leather goods); 6233 (Retailers in household furniture, appliances and equipment); 6234 (Retailers in hardware, paint and glass); and 6239 (All other retailers). The Retail Trade Industry LSS provides the same coverage but in greater detail.*

To arrive at an estimate for new vehicle sales to households, the remaining sales of new vehicles are used, along with additional sources, NAAMSA and eNATIS. NAAMSA is used to derive passenger and light commercial vehicle sales via the dealer market channel, while eNATIS is used to derive the household portion of these sales using registrations' data of passenger and light commercial vehicle sales.

Analysis has been performed to confirm that the movements and levels of all three sources are comparable. The light commercial vehicle category is included in HFCE estimation because households buy and use light commercial vehicles for general household use.

Used car margins are calculated from variables obtained from SIC 63122, Retail sales of used motor vehicles.

### **c. Domestic services and household services**

Household expenditure on domestic services and household services is estimated by considering price and quantity variables independently.

The price (P) component consists of two subcomponents. The first subcomponent is the current wage (per month) received by domestic workers for 2010, provided by the Quarterly Labour Force Survey (QLFS). The second subcomponent is the wages-in-kind portion for 2010. In 2010, the basic wage component was estimated to be about 51 per cent with wages-in-kind making up the other 49 per cent<sup>21</sup>. This proportion has been used for the entire time-series; there are medium-term plans to update it. A time series is formed from these 2010 wage levels using the CPI of domestic wages; each salary band is assumed to have the same growth rate.

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<sup>21</sup>Data for this wages-in-kind component is provided by Stats SA, which conducted a survey in 2010 regarding the various forms of payment-in-kind received by respondents of the survey.

The quantity (Q) component consists of the number of employees employed in private households per salary band for each quarter. These data are provided by the QLFS. The price and the quantity components are multiplied together to form the quarterly series for expenditure on domestic and household services.

#### **d. Postal and courier services**

HFCE on postal and courier services is estimated by considering price and quantity variables independently.

The quantity (Q) component consists of the number of postal articles handled by the SAPO and the price (P) component of the weighted postal services' price levels.

#### **e. Education**

##### **i. Primary and secondary education<sup>22</sup>**

Expenditure on primary and secondary education is estimated by considering price and quantity variables independently. The quantity (Q) component consists of the number of primary and secondary school enrolments in South Africa (two separate series). These data are provided by the Department of Basic Education's Education Statistics in South Africa. The price (P) component consists of the CPI for pre-primary and primary education, and secondary education (two separate series). The growth rates of the quantity and price components are combined and used to compile the current price indicator.

##### **ii. Tertiary education**

As the official data source for tertiary education is published annually with a lag of 38 weeks after the reference period, the latest quarters are extrapolated.

#### **f. Other goods and services**

Due to the lack of suitable quarterly data sources or the weaknesses in quality of the sources thereof, the expenditure of some of the goods and services are interpolated (and extrapolated) from available annual data.

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<sup>22</sup>Two separate series: pre-primary and primary education, as well as secondary education.

### 3.1.4.2 Constant price estimation – deflators

Deflation removes the change in value of a statistic caused by changes in its price component. Deflation consists of dividing a value by a matched price index. A price index is considered to be matched if its commodity constituents are roughly the same as those in the value statistic to which it is applied. Thus, if the value statistic refers to the change in value of all fruit sales, its price change component could be removed by dividing it by a measure of the change in the price of fruit.

The application of a deflator to a series of current price values results in a new series measured at *constant prices*. In the case of HFCE, its constituent expenditures on goods and services are deflated individually at the 3-digit COICOP level (See *Appendix 2 for a complete list of HFCE deflators*).

Deflators used for HFCE are generally limited to components of the CPI. However, a number of goods and services do not have exact CPI deflators. In these instances, inexact matched price indices, or price indices of other countries are used. An example of an inexact deflator is for the good ‘solid fuels’. As no exact deflator exists with which to deflate solid fuels, the CPI of ‘liquid fuels’ is used instead<sup>23</sup>. Finally, two deflators, listed in Table 3.1.4.2, are compiled separately. The reasoning and compilation processes followed are discussed below the table.

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<sup>23</sup> Other examples can be found in Appendix 2.

**Table 3.1.4.2: Sources of separately compiled price deflators**

Expenditure category	Relative importance of component (%)	Deflator	Source and availability
<p><b>Travel payments residents abroad</b></p>	<p>2.0</p>	<p>Exchange rate adjusted CPI</p>	<p>CPIs of selected countries: United Kingdom (UK) – <a href="http://www.ons.gov.uk">www.ons.gov.uk</a>, Germany – <a href="http://www.destatis.de">www.destatis.de</a>, United States of America (US) – <a href="http://www.bls.gov">www.bls.gov</a>, France – <a href="http://www.insee.fr">www.insee.fr</a> and the Netherlands – <a href="https://statline.cbs.nl">https://statline.cbs.nl</a> Available monthly with a two week lag (generally).</p> <p>Rand exchange rate with selected countries listed above. <a href="http://www.reservebank.co.za">www.reservebank.co.za</a> Available daily.</p> <p><b>Statistics South Africa</b> <b>P0351</b> – Tourism and Migration Survey Available monthly, with a lag of 5 months after reference period Outbound passenger numbers</p>
<p><b>Travel receipts non-residents expenditure in SA</b></p>	<p>4.0</p>	<p>Tourist adjusted CPI<sup>24</sup></p>	<p><b>Statistics South Africa</b> <b>P0141</b> – Consumer Price Index Available monthly with a 2 week lag.</p> <p><b>Report 04-05-07</b> – Tourism Satellite Account for South Africa Available yearly with a lag of up to 24 months.</p>

<sup>24</sup> These include CPI series which relate to non-resident expenditures in South Africa, weighted by relevant expenditures from the Tourism Satellite Account.

### **a. Travel payments**

Travel payments refer to the expenditure made by South African resident households while travelling abroad. These expenditures are included in the household consumption estimates of expenditure-based GDP, and then offset in imports of services. This ensures that there is no double-counting of imports of services, as imports are subtracted when calculating expenditure-based gross domestic product.

The travel payments deflator is compiled from the exchange-rate adjusted CPIs of the top five inbound tourism countries. There are medium term plans to improve this series.

### **b. Travel receipts**

Travel receipts refer to the expenditure by non-residents within South Africa. These expenditures are excluded from HFCE, as they are implicitly included in the supply side source data used to estimate the various HFCE series, e.g. restaurants and accommodation. Travel receipts are included in exports within the expenditure-based GDP. A weighted CPI consisting of a basket of tourism-related products is compiled for this indicator<sup>25</sup>.

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<sup>25</sup> *The Tourism Satellite Account (TSA) for South Africa provides data on the expenditure levels by tourists on products. These include accommodation, restaurants and the like, railway, road and water transport services, transport rentals, travel agency services and the like, cultural services, sports and recreational services, tourism-connected products, and non-specific products.*

## 3.2 Government Final Consumption Expenditure (GFCE)

### 3.2.1 Introduction

GFCE measures expenditure incurred by general government, either on collective services or on selected individual goods or services (SNA 2008, 9.84). The sum of the production costs in delivering these goods and services to the public is referred to as final consumption expenditure by government (SNA 2008, 9.87). Also included is output produced for own final use and some output which are market in nature (SNA 2008, 9.87).

Although collective services benefit the community, or certain sections of the community rather than the government, the actual consumption of these services cannot be distributed among individual households, or even among groups of households such as subsectors of the household sector, or to enterprises. It is therefore attributed to the government units that incur the corresponding expenditures (SNA 2008, 9.103)

Final consumption expenditure of government is derived as follows:

The value of all types of output of general government,

*less* the value of output for own account capital formation,

*less* the value of sales of goods and services irrespective of price,

*plus* the value of goods and services purchased from market producers for delivery to households free or at nominal prices (SNA 2008, 9.90).

GFCE also includes consumption of fixed capital as well as taxes *less* subsidies on products.

### 3.2.2 Composition of GFCE

GFCE is estimated for three levels of government. They are:

- Central government (comprising national government departments, extra-budgetary accounts and funds, higher education institutions and social security funds);
- Provincial government (comprising provincial departments); and
- Local government (comprising 8 metropolitan, 44 district and 226 local municipalities).

For each level of government there are three main components used to measure GFCE. They are:

- a. Compensation of employees – this refers to the total remuneration, in cash or in kind, payable to a government employee in return for work done during the accounting period, except work done in connection with own-account capital formation which is capitalized and shown separately. Remuneration includes both wages and salaries and social contributions made on behalf of employees to social insurance schemes. Excluded from remuneration are amounts payable to contractors, self-employed outworkers, and other workers who are not employees of general government units. Any such amounts are recorded under purchases of goods and services ([www.vulindlela.gov.za](http://www.vulindlela.gov.za)).
- b. Purchases of goods and services – this refers to goods and services purchased and completely used up in the production process or for the direct satisfaction of individual or collective human needs or wants. Purchases of goods and services in the government account can also be referred to as government intermediate consumption and used to calculate value added for government, which consists of the value of goods and services consumed as inputs in a production process, excluding fixed assets whose consumption is recorded as consumption of fixed capital (SNA 2008, 6.213).
- c. Sales of goods and services (revenue) –this refers to the value of sales of goods and services sold irrespective of price (SNA 2008, 9.90).

Also included in the estimation of GFCE are the following items:

- a. Financial intermediation services indirectly measured (FISIM) - an indirect measure of the value of financial intermediation services provided to governments by financial corporations such as banks, for which no explicit charges are made.
- b. Consumption of fixed capital - the decline during the accounting period, in the current value of the stock of fixed assets owned and used by government as a result of physical deterioration, normal obsolescence or normal accidental damage (GFS Manual 2014, 6.53).
- c. The SARB output - is the output value of collective monetary services provided by the central bank (South African Reserve Bank) to the government at non-market prices.

Excluded from GFCE is research and development (R&D), which is the value of expenditures on creative work undertaken on a systematic basis in order to increase the stock of knowledge, including the knowledge of man, culture and society, and use of this stock of knowledge to derive new applications. This does not extend to including human capital as an asset within the System of National Accounts (SNA 2008, paragraph 10.103). R&D is instead treated as GFCF, except in cases where it is clear that the activity does not entail any economic benefit for its owner in which case it is treated as intermediate consumption (SNA 2008, paragraph 6.230).

### 3.2.2.1 National and provincial government

Daily transactional data relating to national and provincial government departments on purchases and sales of non-financial assets, revenue generated, expenditures made and liabilities incurred, are recorded on the National Treasury's Vulindlela website ([www.vulindlela.gov.za](http://www.vulindlela.gov.za)). Estimates of the purchases and sales of non-financial assets are used to derive GFCF by national and provincial government departments, while estimates of compensation of employees, purchases of goods and services, and sales of goods and services are used as inputs in deriving GFCE. The data are classified according to the 2014 GFS Manual for each functional department, based on the financial year ends of the national and provincial government departments.

While this system provides the bulk of the information required to estimate GFCE, the expenditure data are only available from the second quarter of 2002, while the revenue data are available from the second quarter of 2007. Although the financial information is available on a monthly basis, with a lag of approximately two weeks in order to allow for possible revisions, there are key elements which are not recorded in the system, and these are discussed below.

To derive quarterly estimates of GFCE by the national and provincial government departments, the monthly data from Vulindlela on compensation of employees, purchases of goods and services and sales of goods and services, are summed into quarters. These estimates are then benchmarked to the relevant annual estimates obtained from Stats SA's Financial Statistics of Consolidated General Government (P9119.4) publication, based on the government's fiscal year, which starts in April and ends in March of every year.

The P911.4 provides a summary of cash-based annual financial data provided on a monthly basis by national departments to National Treasury. Provincial departments report the information to the respective provincial treasuries, which then give the information to National Treasury.

<b>Table 3.2.1: GFCE by level of government, current prices (R billion)</b>					
<b>Level of government</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>Weight* (%)</b>
<i>Data from Vulindlela, SARB and benchmarked to the P9119.4</i>					
<b>Central government</b>	200,7	225,5	257,5	276,2	35,1
<b>Provincial government</b>	287,8	312,4	335,4	359,9	45,7
<b>Local government</b>	51,7	55,0	66,1	72,9	9,3
<b>GFCE by level of government</b>	<b>540,2</b>	<b>592,9</b>	<b>658,9</b>	<b>709,0</b>	<b>90,0</b>
<i>Separately added/subtracted items</i>					
<b>Consumption of fixed capital</b>	56,4	61,0	67,4	73,1	9,3
<b>Financial Intermediation Services Indirectly</b>	2,5	3,0	3,0	3,0	0,4
<b>Research and development</b>	(1,7)	(1,6)	(1,7)	(1,9)	(0,2)
<b>SARB output</b>	2,3	3,5	4,0	4,7	0,6
<b>Separately added/subtracted items</b>	<b>59,5</b>	<b>65,9</b>	<b>72,7</b>	<b>78,9</b>	<b>10,0</b>
<b>Government Final Consumption Expenditure</b>	<b>599,7</b>	<b>658,7</b>	<b>731,6</b>	<b>787,8</b>	
<b>Gross Domestic Product</b>	<b>3 020,3</b>	<b>3 244,8</b>	<b>3 538,1</b>	<b>3 798,6</b>	
<b>Share of GDP (%)</b>	<b>19,9</b>	<b>20,3</b>	<b>20,7</b>	<b>20,7</b>	

*\*Based on 2014 current price estimates*

### 3.2.2.2 Local government

The local government data – not included in Vulindlela – are obtained from the Quarterly Financial Statistics (QFS) of Municipalities, also known as the P9110 and published by Stats SA. The P9110 is a quarterly survey covering all 8 metropolitan, 44 district and 227 local municipalities in South Africa. The information obtained from this publication is used to estimate municipalities’ compensation of employees, purchases of goods and services, and revenue from the sales of goods and services. It also includes the expenditure on local government housing.

The data obtained from P9110 are on an accrual basis and each publication contains revisions to the previous quarter. The annual Financial Census of Municipalities (P9114) publication contains revised figures for all four quarters of a financial year.

The quarterly figures for compensation of employees and sales of goods and services are benchmarked to the annual estimates for municipalities obtained from

Stats SA's P9119.4 publication. For purchases of goods and services, the annual estimates from the P9114 are used as an annual benchmark<sup>26</sup>.

### **3.2.2.3 Extra-budgetary accounts and funds, social security funds and higher education institutions**

The SARB conducts a quarterly survey of all extra-budgetary accounts and funds, social security funds and higher education institutions. For higher education institutions, which comprise all learning programmes leading to qualifications higher than Grade 12 or its equivalent, the SARB receives audited financial statements annually from the Department of Higher Education and Training (DHET).

Extra-budgetary accounts and funds are accounts and funds of national and provincial government departments – which are excluded from the normal budget as they do not operate through normal parliamentary budgetary procedures, e.g. trading accounts. Audited financial statements are used to verify the indicator series from the quarterly survey.

Included within the extra-budgetary accounts and funds are social security funds, which are funds that are separately organised from the other activities of government units, hold their own assets and incurs liabilities separately, and engages in financial transactions on their own account (SNA 2008, 22.21).

The quarterly figures for extra-budgetary accounts and funds as well as those of social security funds are benchmarked to the relevant annual estimates obtained from Stats SA's P9119.4 publication, by component.

Higher education quarterly estimates and Stats SA's annual publication (P9103.1) are available on a calendar year basis (January to December), while the

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<sup>26</sup> *The estimates of purchases of goods and services provided in the P9119.4 publication include grants, which for GFCE estimation are excluded.*

consolidated publication which is used to benchmark all the other levels of government is on a fiscal year (April to March). Adjustments for the different financial years are therefore made for GFCE estimation.

Table 3.2.2: Data sources for GFCE by component <sup>27</sup>				
Component	Relative importance of component (%)	Indicator variable & unit of measure	Current prices	
			Quarterly	Annual
Compensation of employees	62,5	Wages, salaries and social contributions <sup>28</sup> R million	<p><i>National &amp; provincial government</i>  <b>National Treasury</b>  <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a></p> <p><i>Extra-budgetary &amp; higher education institutions</i>  <b>South African Reserve Bank</b></p>	<p><b>Statistics South Africa</b>  <b>P9119.4</b> - Financial Statistics of Consolidated General Government Table A GFS code 21 (<i>for all levels of government, except higher-education institutions</i>)  <i>Higher-education institutions</i>  <b>P9103.1</b> - Financial Statistics of Higher-Education Institutions Table A GFS code 21.  <b>Statistics South Africa</b>  <b>P9119.4</b> - Financial Statistics of Consolidated General Government Table A GFS code 22 (<i>for other levels of government, except higher-education institutions &amp; local government</i>)  <i>Higher-education institutions</i>  <b>P9103.1</b> - Financial Statistics of Higher-Education Institutions Table A GFS code 22.  <b>P9119.4</b> - Financial Statistics of Consolidated General Government Part 2 GFS code 22.</p>
Purchases of goods and services	36,9	Goods and services consumed <sup>29</sup> at current prices R million	<p><i>Local government (including local housing by municipalities)</i>  <b>Statistics South Africa</b>  <b>P9110</b> - QFS of Municipalities</p>	

<sup>27</sup> The P9119.4 publication does not give a breakdown of components of GFCE by level of government. However, Table 9 in the disaggregated tables provides data for all levels of government and can be obtained from [www.statssa.gov.za](http://www.statssa.gov.za).

<sup>28</sup> These are social contributions made on behalf of the employees by the employer to social insurance schemes.

<sup>29</sup> These are goods and services consumed as inputs during the production process and are comprised of, for example commercial rent and operating expenses such as business and professional services, fuel, oil and gas etc.

Table 3.2.2: Data sources for GFCE by component <sup>27</sup>				
Component	Relative importance of component (%)	Indicator variable & unit of measure	Current prices	
			Quarterly	Annual
<b>Sales of goods and services</b>	-9,4	Sales of goods and services by market and non-market establishments <sup>30</sup> at current prices R million.	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>  <i>Extra-budgetary &amp; higher education institutions</i> <b>SARB</b>  <i>Local government (including local housing by municipalities)</i> <b>Statistics South Africa</b> <b>P9110</b> - QFS of Municipalities	<b>Statistics South Africa</b> <b>P9119.4</b> - Financial Statistics of Consolidated General Government Table A GFS code 14 ( <i>for other levels of government, except higher-education institutions</i> ) <i>Higher-education institutions</i> <b>P9103.1</b> - Financial Statistics of Higher-Education Institutions Table A GFS code 14.
<b>Consumption of fixed capital</b>	9,3	Physical deterioration, normal obsolescence or normal accidental damage at current and constant prices R million	Quarterly estimates provided by SARB, for all levels of government.	South African Reserve Bank annuals
<b>SARB output</b>	0,6	Collective services, such as monetary services provided by SARB		
<b>FISIM</b>	0,4	Financial intermediation services provided by financial corporations at current prices R million		
<b>Research and Development</b>	-0,2	Expenditures on creative work undertaken on a systematic basis in order to increase the stock of knowledge. R million		

<sup>30</sup> Included in here as well are administrative fees, incidental sales by non-market establishments and imputed sales of goods and services.

### 3.2.3 Estimation methods

GFCE is estimated by the sum of compensation of employees, purchases of goods and services, consumption of fixed capital<sup>31</sup>, SARB's output and FISIM<sup>32</sup>, less sales of goods and services for all levels of government.

#### 3.2.3.1 Current-price estimation

##### a. National and provincial government

Although the Vulindlela system provides data for national and provincial government departments, it does not include data for Parliament. The data for Parliament are instead obtained from National Treasury's monthly Section 32 Report, which records cash-based data on revenue and expenditure for each function of government by level of government. For the Department of Defence (DoD) however, only expenditure data are reported.

##### i. Compensation of employees

Compensation of employees is the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period (SNA 2008, 7.5).

##### ii. Purchases of goods and services

Consumption of goods and services is the act of completely using up the goods and services in the process of production or for the direct satisfaction of individual or collective needs or wants (SNA 2008, 9.39).

##### iii. Sales of goods and services

Sales of goods and services include sales by market establishments, administrative fees, incidental sales by non-market establishments, and imputed sales of goods

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<sup>31</sup> Current and constant estimates of this variable are received from SARB for all government levels.

<sup>32</sup> Only current estimates are received from SARB, the weighted goods and services deflator is used to derive the constant price estimates.

and services (GFS Manual 2014, 5.136. For national and provincial government, the annual sales of goods and services from Stats SA's GFS division are trended to obtain the quarterly series.

#### **b. Local government**

The P9110 covers financial information for all local, district and metropolitan municipalities, which number 278 currently. The information obtained from this publication is used to estimate municipalities' expenditure on compensation of employees, purchases of goods and services, and revenue from the sales of goods and services. Local government estimates are estimated according to the accrual accounting method; therefore no adjustments are made to the information. Since the published information becomes available 12 weeks after the end of the reference period, preliminary estimates are used for the most recent quarter. These preliminary estimates are revised when published data become available.

#### **c. Extra-budgetary accounts and funds, social security institutions and higher-education institutions**

The SARB conducts a quarterly survey for extra-budgetary accounts and funds, higher-education institutions and social security funds. The survey collects data on compensation of employees, purchases of goods and services, and sales of goods and services.

#### **d. Consumption of fixed capital (COFC), SARB's output and financial intermediation services indirectly measured (FISIM)**

Current price estimates of FISIM are obtained directly from the SARB and added to GFCE estimates without any adjustments, as are the estimates of the SARB's output. Estimates of expenditure on research and development and weapons systems, which are part of GFCF, are excluded from GFCE estimates. Current and constant price estimates of consumption of fixed capital are currently obtained from the SARB and are also used without any further adjustments.

### 3.2.3.2 Constant-price estimates – deflators

Deflation is the process of **excluding** the effect of price variation from a measured variation in value. GFCE is deflated by component: compensation of employees; purchases of goods and services; and sales of goods and services – for each level of government. Research and development and SARB's output are deflated using a weighted index of the prices of purchases of goods and services.

The output of government is measured on the basis of the costs it incurs to produce public goods and services. Since government services are often delivered free or at notional prices, output prices are not available. Therefore input prices are used to deflate each of the sub-components individually.

#### a. Compensation of employees

Compensation of employees' quarterly volume estimates by level of government – are derived using a volume indicator method based on the number of employees recorded for total government. The data are obtained from the Quarterly Employment Survey (QES) (P0027 publication) and expressed as an index with base 2010 = 100.

The constant – price estimates for compensation of employees are obtained by using an employment volume indicator multiplied by the average value of current compensation of employees (obtained from the SARB) in the base year (2010). The volume indicator is derived by dividing the quarterly employment series by their average in the base year. Since the employment data are published 12 weeks after the period to which they relate, for the latest quarter – the employment number is estimated based on partial information and revised the subsequent quarter as more complete data become available.

For national and provincial government, a quality index is applied to the employment volume series described above in the derivation of the constant – price COE data. The quality index is based on two assumptions – First, the quality of the output varies with the salary level at which it is performed and promotion to a higher salary level implies improvement in the work quality. Second, quality is not an element of price; it is an element of quantity.

The addition of the quality index allows for labour productivity changes to be applied to the time series of compensation of employees over time. The quality adjustment is estimated using PERSAL<sup>33</sup> data which tabulates monthly employment by salary level over the time period. A quality index is calculated for each quarter and multiplied by the initially compiled constant price COE data. For local government, extra-budgetary, higher education and social security funds, a quality adjustment is not applied as data by salary level are not available.

An implicit price deflator (IPD) can then be derived for compensation of employees as the current price series divided by the quality adjusted constant price series.

#### **b. Purchases of goods and services**

PPIs are used for the deflation of each of the sub-components for purchases of goods and services for which a matched PPI can be found. Where this is not the case, a CPI component series is used instead, e.g. in the case of communications. QES average earnings indexes are used to deflate selected purchased services e.g. business services.

#### **c. Sales of goods and services**

Sales of goods and services as reported in Vulindlela include licences, permits and fees, sales of waste paper, publications, services rendered for academic services

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<sup>33</sup> *The PERSAL system is a civil service payment system for national and provincial government employees, administered by the National Treasury.*

etc. The CPI for all urban areas, excluding food and non-alcohol beverages, is used as a deflator.

**d. SARB output**

Current price estimates from the SARB are deflated using a weighted price index for goods and services.

**e. Consumption of fixed capital and FISIM**

Current and constant price estimates are obtained directly from the SARB.

Table 3.2.3: Data sources for GFCE price deflators by line item

Line item	Deflator and unit of measurement	Source
<b>Compensation of employees</b>	<i>All levels of government</i> Implicit Price Deflator (IPD), where the volume index is based on employment data by level of government in SIC 9 Volume index  PERSAL data by salary level Volume index <i>Used to make quality adjustments to national and provincial data</i>	<b>Statistics South Africa</b> <b>P0271</b> - Quarterly Employment Survey (QES)  <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>
<b>FISIM and Purchases of goods and services</b>	<i>All levels of government</i> Weighted price index made up of CPIs and PPIs CPI - Index 2000 = 100 & 2012 = 100 PPI – Index 2012 = 100  QES average wage price index –SIC 8: Real estate and business services	<b>Statistics South Africa</b> <b>P0141</b> - Consumer Price Index (CPI) <b>P0142.1</b> - Producer Price Index (PPI)  <b>Statistics South Africa</b> <b>P0271</b> - Quarterly Employment Survey (QES)
<b>Sales of goods and services (revenue)</b>	<i>All levels of government</i> CPI for all urban areas excluding 'Food and Non-alcoholic beverages' price index. Index 2000 = 100 & 2012 = 100	<b>Statistics South Africa</b> <b>P0141</b> - Consumer Price Index (CPI) COICOP
<b>Consumption of fixed capital</b>	<i>All levels of government</i> IPD based on current and constant estimates from SARB Index 2010 = 100	<b>South African Reserve Bank</b>
<b>SARB output</b>	<i>All levels of government</i> Weighted price index made up of CPIs and PPIs CPI - Index 2000 = 100 & 2012 = 100 PPI – Index 2012 = 100	<b>Statistics South Africa</b> <b>P0141</b> - Consumer Price Index (CPI) <b>P0142.1</b> - Producer Price Index (PPI)

### 3.3 Gross fixed capital formation (GFCF)

#### 3.3.1 Introduction

GFCF is a component of GDP that groups transactions on the net acquisitions (acquisitions less disposals) of capital assets, both existing and new, by general government, private enterprises (i.e. private and quasi-corporations) and state-owned corporations (hereinafter public corporations) and in addition households and unincorporated enterprises (as defined in the United Nations' System of National Accounts 2008 (SNA 2008), 10.32)<sup>34</sup>.

Two exclusions are made from what could be considered a relevant asset for purposes of estimating GFCF: namely consumer durables and small tools. Consumer durables are not regarded as fixed assets in the SNA as the services they provide are not counted within total GDP (System of National Accounts 2008, 3.47). Small tools, which are goods used repeatedly in the production process over long periods of time, but are relatively small in value, are treated as materials or supplies used for intermediate consumption (System of National Accounts, 10.35) and are also excluded from GFCF.

#### 3.3.2 Composition of GFCF

GFCF estimates are grouped into various asset classes – in accordance with recommendations set out in the SNA 2008 and the Government Finance Statistics (GFS) manual of 2014, which is used to classify government revenue, expenditure, assets and liabilities. These groupings or asset classes are:

- a. Residential buildings.
- b. Non-residential buildings.
- c. Construction works.
- d. Machinery and equipment<sup>35</sup>:

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<sup>34</sup> *The spending on capital assets is on tangible and intangible capital assets. Repairs and maintenance undertaken on such assets to keep them in good working order, without extending their life, increasing their capacities or improving their performance, are treated as intermediate consumption and consequently, excluded from GFCF.*

<sup>35</sup> *The 2008 SNA has a separate category called weapons systems, under which military equipment is classified.*

- i. Transport equipment<sup>36</sup> (including military transport equipment).
  - ii. Information, computer and telecommunications (ICT) equipment.
  - iii. Other machinery and equipment (including other military equipment).
- e. Cultivated biological resources.
- f. Intellectual property products<sup>37</sup>.
  - i. Computer software (including databases).
  - ii. Research and development.
  - iii. Mineral exploration and evaluation.
- g. In addition, the costs incurred in selling an asset to another economic agent (including the costs of ownership transfer on non-produced assets) are also counted as part of the total GFCF and referred to as transfer costs.

For consistency, the government record of expenditures, i.e. the Vulindlela system data, as well as the P9101 (Capital Expenditure by the Public Sector) publication data, the Annual Financial Statistics (AFS) survey's Property, Plant and Equipment (PPE) schedules are used as quarterly and annual benchmark source data respectively for capital expenditure, making use of an identical breakdown of asset types.

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<sup>36</sup> *The transport equipment asset class is divided into motor vehicles and other transport equipment.*

<sup>37</sup> *In 2014, South Africa implemented specific elements of the SNA 2008. These include the capitalisation of research and development and weapons systems. The group "intangible fixed assets" was also changed to exclude third-party rights, which are non-produced assets in the SNA.*

Institutional sector	2011	2012	2013	2014	Weight* (%)
<b>Private enterprises (including households and unincorporated enterprises) and public corporations</b>	495,1	531,5	614,0	659,2	<b>84,3</b>
<b>General government</b>	82,9	94,1	105,8	122,4	<b>15,7</b>
<b>Gross fixed capital formation</b>	<b>578,0</b>	<b>625,6</b>	<b>719,8</b>	<b>781,7</b>	
<b>Gross Domestic Product</b>	<b>3 020,3</b>	<b>3 244,8</b>	<b>3 538,7</b>	<b>3 796,8</b>	
<b>Share of GDP (%)</b>	<b>19,1</b>	<b>19,3</b>	<b>20,3</b>	<b>20,6</b>	

*\*Weights are based on 2014 current price values.*

Asset type	2011	2012	2013	2014	Weight* (%)
<b>Residential buildings</b>	50,9	54,8	61,0	66,8	8,5
<b>Non-residential buildings</b>	59,6	62,8	64,0	70,9	9,1
<b>Construction works</b>	164,3	173,2	208,7	233,4	29,9
<b>Transport equipment</b>	62,0	72,7	86,6	91,6	11,7
<b>Information, computer and telecommunications (ICT) equipment</b>	17,4	22,4	26,5	28,0	3,6
<b>Other machinery and equipment</b>	185,8	196,9	223,2	234,8	30,0
<b>Research and development</b>	14,5	14,9	15,9	16,6	2,1
<b>Computer software</b>	10,7	14,1	16,2	21,6	2,8
<b>Mineral exploration and evaluation</b>	0,4	0,6	0,6	0,4	0,1
<b>Cultivated biological resources</b>	4,1	4,8	7,3	6,3	0,8
<b>Transfer costs</b>	8,4	8,4	9,8	11,2	1,4
<b>Gross Fixed Capital Formation</b>	<b>578,0</b>	<b>625,6</b>	<b>719,8</b>	<b>781,7</b>	
<b>Gross Domestic Product</b>	<b>3 020,3</b>	<b>3 244,8</b>	<b>3 538,1</b>	<b>3 798,6</b>	
<b>Share of GDP (%)</b>	<b>19,1</b>	<b>19,3</b>	<b>20,3</b>	<b>20,7</b>	

*\*Weights are the share of each asset category in total GFCF at current prices in 2014.*

### 3.3.3 Overview of source data

The compilation of GFCF estimates is based on two kinds of source data: official data –compiled and published by Stats SA; data produced by other government organisations and compiled as part of those organisations’ administrative duties, e.g, building plans passed and completed, required by law to demonstrate the local authority’s capacity for effective governance. Data mostly compiled by the SARB for national accounting purposes are also and will be replaced with Stats SA – produced data, as soon as data are available.

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
Residential & non-residential buildings	8,5 and 9,1	<p><i>Private enterprises &amp; public corporations</i></p> <p><b>Building plans passed</b> at current prices R'000</p> <p><b>Buildings completed</b> at current prices, for the calculation of coverage factors. R'000</p> <p><b>Building plans passed for alterations and additions</b> to residential structures are grossed up to the IES level and then trended on buildings plans passed in subsequent years, at current prices (<i>for residential buildings only</i>). Rand value</p>	<p><i>Private enterprises &amp; public corporations</i></p> <p><b>Statistics South Africa P5041.1</b> – Selected Building Statistics of the Private Sector as Reported by Local Government Institutions.</p> <p><b>Report-50-11-01</b> - Building Statistics</p>	<p><i>Private enterprises</i><sup>38</sup></p> <p><b>Statistics South Africa P0021</b> – Annual Financial Statistics (AFS) PPE Schedules Large Sample Survey (LSS) PPE Schedules Supply and Use Tables (SUTs)</p> <p>Residential buildings only Sum of four quarters</p> <p><b>Alterations and additions for residential buildings Income and Expenditure Survey (IES)</b></p> <p><i>Public corporations</i></p> <p><b>Statistics South Africa P9101</b> – Capital Expenditure by the Public Sector, purchases net of sales of non-financial assets</p>
		<p><i>National &amp; provincial government</i></p> <p>Purchases net of the sales of non-financial assets at current prices Rand value</p>	<p><i>National &amp; provincial government</i></p> <p><b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a></p>	<p><i>General government</i></p> <p><b>Statistics South Africa P9101</b> – Capital Expenditure by the Public Sector, net of sales of non-financial assets</p>

<sup>38</sup> Currently, annual data provided by the SARB are used to benchmark quarterly estimates for public corporations, private enterprises and general government for the period 2005 – 2010. Thereafter, independent annual estimates are utilised.

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
Residential & non-residential buildings	8,5 and 9,1	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b>	<i>General government</i> <b>P9119.3</b> – Financial statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial statistics of Provincial Government, sales of non-financial assets only <b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial statistics of higher- education institutions, sales of non-financial assets only
		<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates	
Construction works	29,9	<i>Private enterprises &amp; public corporations</i> Residual of total construction indicator comprising labour and material components at current prices R'000 & R million Thousands ( <i>no. of employees</i> )	<i>Private enterprises &amp; public corporations</i> <b>Statistics South Africa</b> <b>P0044</b> - Quarterly Financial Statistics (QFS) <b>P0277</b> – Quarterly Employment Statistics (QES) <b>P0211</b> – Quarterly Labour Force Survey (QLFS) <b>P6141.2</b> – Wholesale Trade Sales (WTS) <b>P6242.1</b> – Retail Trade Sales (RTS) <b>P3041.2</b> – Manufacturing: Production and Sales	<i>Private enterprises</i> <b>Statistics South Africa</b> <b>P0021</b> – AFS PPE schedules LSS PPE schedules SUTs  <i>Public corporations</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital expenditure by the public sector
		<i>National &amp; provincial government,</i> Purchases net of sales of non-financial assets at current prices R million	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>	<i>General government</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector, net of sales of non-financial assets

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
Construction works	29,9	<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates	<i>General government</i> <b>P9119.3</b> – Financial Statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial Statistics of Provincial Government, sales of non-financial assets only <b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial Statistics of Higher Education Institutions, sales of non-financial assets only
		<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b> Public Finance division	
Transport equipment	11,7	<i>Private enterprises &amp; public corporations</i> Residual of total transport equipment comprising sales of motor vehicles and imports of other transport equipment R million	<i>Private enterprises &amp; public corporations</i>  <b>Statistics South Africa</b> <b>P6343.2</b> – Motor Trade Sales (MTS)  <b>South African Revenue Service</b> Import customs declarations	<i>Private enterprises</i> <b>Statistics South Africa</b> <b>P0021</b> –AFS PPE Schedules LSS PPE Schedules SUTs  <i>Public corporations</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector
		<i>National &amp; provincial government,</i> Purchases net of sales of non-financial assets at current prices R million	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>	<i>General government</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector, net of sales of non-financial assets <b>P9119.3</b> – Financial Statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial Statistics of Provincial Government, sales of non-
		<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates	

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
		<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b>	financial assets only <b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial Statistics of Higher Education Institutions, sales of non-financial assets only
<b>Information, computer and telecommunications equipment (ICT)</b>	3,6	<i>Private enterprises &amp; public corporations</i> Residual of total imports of ICT equipment less GFCF by general government ICT equipment at current prices. R'000	<i>Private enterprises &amp; public corporations</i> <b>South African Revenue Service</b>	<i>Private enterprises</i> <b>Statistics South Africa</b> <b>P0021</b> – AFS PPE Schedules LSS PPE Schedules SUTs  <i>Private corporations</i> <i>Public corporations</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector
		<i>National &amp; provincial government</i> Purchases net of sales of non-financial assets at current prices Rand value	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>	<i>General government</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public
		<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates	Sector, net of sales of non-financial assets <b>P9119.3</b> – Financial Statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial Statistics of Provincial Government, sales of non-financial assets only
		<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b>	<b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial Statistics of

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
				Higher Education Institutions, sales of non-financial assets only
Other machinery and equipment	30,0	<i>Private enterprises &amp; public corporations</i> Residual of total machinery and equipment indicator comprising manufacturing sales of specific SIC 3 manufactures less exports plus imports of machinery at current prices. R'000	<i>Private enterprises &amp; public corporations</i> <b>Statistics South Africa</b> <b>P3041.2</b> – Manufacturing: Production and Sales <b>South African Revenue Service (SARS)</b>	<i>Private enterprises</i> <b>Statistics South Africa</b> <b>P0021</b> – AFS PPE schedules LSS PPE schedules SUTs  <i>Public corporations</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector
		<i>National &amp; provincial government</i> Purchases net of sales of non-financial assets at current prices Rand value	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>	General government <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector, net of sales of non-financial assets <b>P9119.3</b> – Financial Statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial Statistics of Provincial Government, sales of non-financial assets only
		<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates.	
		<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b>	<b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial Statistics of Higher Education Institutions, sales of non-financial assets only

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
Intellectual Property Products	2,1	<b>Research and development</b> <i>Private enterprises, public corporations and general government</i> GFCF on research and development	<i>Private enterprises, public corporations and general government</i> <b>South African Reserve Bank</b>	<i>Private enterprises, public corporations and general government</i> <b>South African Reserve Bank</b>
Intellectual Property Products	2,8	<b>Computer software</b> <i>Private enterprises &amp; public corporations</i> Residual of total GFCF on computer software less computer software GFCF by general government	<i>Private enterprises &amp; public corporations</i> <b>South African Reserve Bank</b>	<i>Private enterprises &amp; public corporations</i> <b>Statistics South Africa</b> <b>P0021</b> – AFS PPE Schedules LSS PPE Schedules SUTs
		<i>National &amp; provincial government</i> Purchases net of sales of non-financial assets at current prices R million	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>	<i>General government</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public
		<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates	Sector, net of sales of non-financial assets <b>P9119.3</b> – Financial Statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial Statistics of Provincial Government, sales of non-financial assets only
	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b>	<b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial Statistics of Higher Education Institutions, sales of non-financial assets only	
	0,1	<b>Mineral exploration and evaluation</b> <i>Private enterprises only</i>	<i>Private enterprises only</i> <b>South African Reserve Bank</b>	<i>Private enterprises only</i> <b>Statistics South Africa</b> <b>P0021</b> – AFS PPE Schedules

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
		Total GFCF on mineral exploration and evaluation R million		LSS PPE Schedules SUTs
<b>Cultivated biological resources</b>	<b>0,8</b>	<i>Private enterprises &amp; public corporations</i> Residual of total GFCF on cultivated biological resources less cultivated biological resources GFCF by general government	<i>Private enterprises &amp; public corporations</i> <b>South African Reserve Bank</b>	<i>Public corporations</i> <b>P9101</b> – Capital Expenditure by the Public Sector
<b>Cultivated biological resources</b>	<b>0,8</b>	<i>National &amp; provincial government</i> Purchases net of sales of non-financial assets at current prices R million	<i>National &amp; provincial government</i> <b>National Treasury</b> <a href="http://www.vulindlela.gov.za">www.vulindlela.gov.za</a>	<i>General government</i> <b>Statistics South Africa</b> <b>P9101</b> – Capital Expenditure by the Public Sector, net of sales of non-financial assets <b>P9119.3</b> – Financial Statistics of National Government, sales of non-financial assets only <b>P9121.1</b> – Financial Statistics of Provincial Government, sales of non-financial assets only <b>P9102</b> – Financial Statistics of Extra-budgetary Accounts and Funds, sales of non-financial assets only <b>P9103.1</b> – Financial Statistics of Higher Education Institutions, sales of non-financial assets only
		<i>Local government</i> Purchases net of sales of non-financial assets at current prices R'000	No quarterly capital expenditure data are collected for local government departments. Annual data are interpolated to derive quarterly estimates	
		<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> Purchases net of sales of non-financial assets at current prices R million	<i>Extra-budgetary &amp; higher-education institutions &amp; social security funds</i> <b>South African Reserve Bank</b>	
<b>Transfer costs</b>	<b>1,4</b>	<i>Private enterprises &amp; public corporations</i> Transfer duties at current prices R'000	<b>South African Revenue Service</b>	Sum of four quarters

Table 3.3.3: Data sources for GFCF by asset type				
Asset type	Relative importance of asset type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
		SIC 842 turnover at current prices to calculate commission fees R'000 Conveyancer fees (average fees multiplied by volumes of real estate transactions from Deeds Office) Deeds levies at current prices, Rand value	<b>Statistics South Africa</b> <b>P0044 - QFS</b>  <b>Deeds Office</b>	

Table 3.3.4: Operational characteristics of source data, by asset type						
Asset type	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
Residential buildings and non-residential buildings	K001 & K002	<i>Private enterprises &amp; public corporations</i> Building plans passed - Monthly	8 weeks after reference month	Latest quarter downloaded two months after end of latest month	Data revised quarterly	Statistics South Africa
		Building Statistics - Annual	2 years after the reference year			
		Income and Expenditure Survey - Periodically every 5 years - <i>for residential buildings only</i>	2 years after the reference year	Latest quarter downloaded 2 weeks the end of the latest month	Data revised monthly	National Treasury
		<i>National &amp; provincial government</i> - Monthly	2 weeks after reference month			
		<i>Extra-budgetary and higher-education institutions &amp; social security funds</i> Quarterly	12 weeks after the reference quarter			
		<i>Local government</i> Annual	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	Statistics South Africa
Construction works	K003	<i>Private enterprises &amp; public corporations</i> QFS, QES & QLFS – Quarterly	12 weeks after reference quarter	Preliminary estimates obtained 3 to 4 weeks following reference period	Data revised quarterly	Statistics South Africa
		WTS, RTS & manufacturing sales - Monthly	12 weeks after reference month		Data revised monthly	
		<i>National &amp; provincial government</i> - Monthly	2 weeks after reference month	Latest quarter downloaded 2 weeks the end of the latest month	Data revised monthly	National Treasury

**Table 3.3.4: Operational characteristics of source data, by asset type**

Asset type	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
		<i>Extra-budgetary and higher-education institutions &amp; social security funds - Quarterly</i>	12 weeks after the reference quarter	Data received 4 weeks following the reference period	Data revised quarterly	<b>South African Reserve Bank</b>
		<i>Local government</i> Annually	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	<b>Statistics South Africa</b>
<b>Transport equipment</b>	<b>K004</b>	<i>Private enterprises &amp; public corporations</i>  Motor trade sales – Monthly	7 weeks after reference period	Data obtained 7 weeks after end of third month	Data revised monthly and once a year Data revised monthly	<b>Statistics South Africa</b>  <b>South African Revenue Services</b>
		Imports of other transport equipment & BOP adjustments – Monthly	5 & 6 weeks after reference period	Preliminary data obtained 6 weeks after end of reference quarter		<b>South African Revenue Services</b>
		<i>National &amp; provincial government</i> Monthly	2 weeks after reference month	Data obtained 2 weeks after latest month	Data revised monthly	<b>National Treasury</b>
		<i>Extra-budgetary and higher-education institutions &amp; social security funds - Quarterly</i>	12 weeks after the reference quarter	Data received 4 weeks following the reference period	Data revised quarterly	<b>South African Reserve Bank</b>
		<i>Local government</i> Annually	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	<b>Statistics South Africa</b> <b>National and</b>
<b>Information, computer and telecommunications (ICT) equipment</b>	<b>K005</b>	<i>Private enterprises &amp; public corporations</i> Monthly Imports of computer equipment – Monthly	5 & 6 weeks after reference period	Preliminary data obtained 6 weeks after end of reference quarter	Data revised monthly	<b>South African Revenue Services</b>
		<i>National &amp; provincial government</i> Monthly	2 weeks after reference month	Data obtained 2 weeks after latest month	Data revised monthly	<b><u>National Treasury</u></b>

**Table 3.3.4: Operational characteristics of source data, by asset type**

Asset type	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
		<i>Extra-budgetary and higher-education institutions &amp; social security funds - Quarterly</i>	12 weeks after the reference quarter	Data received 4 weeks following the reference period	Data revised quarterly	<b>South African Reserve Bank</b>
		<i>Local government</i> Annually	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	<b>Statistics South Africa</b>
<b>Machinery and equipment</b>	<b>K006</b>	<i>Private enterprises &amp; public corporations</i> Monthly Imports and exports of other machinery and equipment - Monthly	5 & 6 weeks after reference period	Preliminary data obtained 6 weeks after end of reference quarter	Data revised monthly	<b>South African Revenue Services</b>
		<i>Private enterprises &amp; public corporations</i> Manufacturing sales of certain industries' machinery and equipment - Monthly	4 weeks after end of reference quarter	Preliminary data available 3 - 4 weeks after reference period	Data revised monthly	<b>Statistics South Africa</b>
		<i>National &amp; provincial government</i> Monthly	2 weeks after reference month	Data obtained 2 weeks after latest month	Data revised monthly	<b><u>National Treasury</u></b>
		<i>Extra-budgetary and higher-education institutions &amp; social security funds - Quarterly</i>	12 weeks after the reference quarter	Data received 4 weeks following the reference period	Data revised quarterly	<b>South African Reserve Bank</b>
		<i>Local government</i> Annually	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	<b>Statistics South Africa</b>

Table 3.3.4: Operational characteristics of source data, by asset type						
Asset type	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
Research and development	K007	<i>All institutional units</i> R&D GFCF Quarterly	12 weeks after reference quarter	Data received 4 weeks after reference period	Data revised quarterly	South African Reserve Bank
Computer software	K008	<i>Private enterprises &amp; public corporations</i> Quarterly	12 weeks after reference quarter	Data received weeks after reference period	Data revised quarterly	South African Reserve Bank
		<i>National &amp; provincial government</i> Monthly	2 weeks after reference month	Data obtained 2 weeks after latest month	Data revised monthly	<u>National Treasury</u>
		<i>Extra-budgetary and higher-education institutions &amp; social security funds -</i> Quarterly	12 weeks after the reference quarter	Data received 4 weeks following the reference period	Data revised quarterly	South African Reserve Bank
		<i>Local government</i> Annually	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	Statistics South Africa
Mineral exploration and evaluation	K009	<i>Private enterprises only</i> GFCF on mineral exploration and evaluation Quarterly	12 weeks after reference quarter	Data received 4 weeks after reference period	Data revised quarterly	South African Reserve Bank
Cultivated biological resources	K010	<i>Private enterprises &amp; public corporations</i> Cultivated biological resources GFCF Quarterly	12 weeks after reference quarter	Data received 1 month prior to QB publication	Data revised quarterly	South African Reserve Bank National Accounts
		<i>National &amp; provincial government</i> Monthly	2 weeks after reference month	Data obtained 2 weeks after latest month	Data revised monthly	<u>National Treasury</u>
		<i>Extra-budgetary and higher-education institutions &amp; social security funds -</i> Quarterly	12 weeks after the reference quarter	Data received 4 weeks following the reference period	Data revised quarterly	South African Reserve Bank
		<i>Local government</i> Annually	24 months after reference period	Excel spreadsheets obtained 24 months after reference period	Data revised annually	Statistics South Africa

**Table 3.3.4: Operational characteristics of source data, by asset type**

Asset type	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
Transfer costs	K011	<i>Private enterprises only</i> Transfer duties Monthly	1 month after the reference month	Data received 4 weeks after reference month	Data revised monthly	<b>South African Revenue Service</b>
		Turnover of SIC 842 Quarterly	12 weeks after the reference quarter	Data received 12 weeks after latest quarter	Data revised quarterly	<b>Statistics South Africa</b> National Accounts
		Deeds levies Monthly	1 month after the reference month	Data received 4 weeks after reference month	The previous month is revised every month	<b>Deeds office</b>

### 3.3.4 Calculation of quarterly current price estimates

#### a. General government

Daily transactional data reported by general government departments are recorded on National Treasury's Vulindlela website ([www.vulindlela.gov.za](http://www.vulindlela.gov.za)). Estimates of the purchases and sales of non-financial assets of all types (See *Section 3.3.2: Composition of GFCF above*) and for two levels of government (national and provincial) are provided. The data are classified according to the 2001 GFS Manual, based on the financial year ends of the national and provincial government departments. Daily, transactional data are saved on the website and are available on a monthly basis.

The annual P9101<sup>39</sup> survey from Stats SA provides estimates of purchases and sales<sup>40</sup> of non-financial assets by local government institutions, currently comprising 278 local, district and metropolitan municipalities. The data cover all the asset types and are available on an annual basis only, with a lag of 2 years. Estimates for the latest quarter are interpolated using a straight line technique, based on the latest preliminary estimates of expected annual capital expenditure. The quarterly estimates are revised when the annual data are revised in the next publication. GFCF for Parliament is also treated in a similar manner.

For the time being the estimates of GFCF for extra-budgetary and higher-education institutions, as well as social security funds are obtained from SARB. Preliminary data are received from the SARB approximately four weeks following the reference period. The data are then revised when final estimates are published, with a lag of one quarter.

Since the data for general government are reported on a cash basis, accrual adjustments are made to the data. These adjustments preserve the annual value derived as the sum of the four quarters.

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<sup>39</sup> This refers to the Capital Expenditure by the Public Sector survey.

<sup>40</sup> The Local Government and Provincial Institutions Division does not publish the sales estimates. These are only available upon request.

**b. Public corporations and private enterprises**

Residential and non-residential building activity by the private sector (that is, private enterprises and public corporations) is estimated using approval of building plans data as well as additions and alterations data, as measured in the monthly Selected Buildings Statistics of the Private Sector Reported by the Local Government Institutions survey or the P5041.1 publication. The data at current prices are available on a monthly basis, with a lag of 2 months. The information is collected from major municipalities only. Full coverage is estimated using annual coverage factors.

Quarterly capital expenditure estimates by the private sector on construction works or engineering construction projects are derived residually by subtracting capital expenditure by the private and general government sectors on residential and non-residential buildings, as well as capital expenditure on construction works by the general government sector, from a total construction indicator. The total construction indicator is total activity on residential and no-residential buildings and construction works, it is based on a supply-side construct, comprising estimates of weighted labour costs and building materials. It covers the activities of all institutional units, including general government.

Data for the building materials component are obtained from the monthly surveys that collect wholesale and retail trade sales, as well as manufacturing production and sales available in the P6141.2, the P3242.1 and the P3041.2 publications. The data for the average earnings in the construction industry are obtained from the Quarterly Employment Statistics (QES) survey, while the numbers of construction industry employees (both for formal and informal employment) are obtained from the Quarterly Labour Force Survey (QLFS) (the P0277 and the P0211 publications).

Capital expenditure on transport equipment is broken down into motor vehicles and other transport equipment. The data on the sales of new motor vehicles from the P6343.2 publication or the Motor Trade Sales survey, a monthly survey from Statistics SA; are used as the control total of total motor vehicles sales, from which

motor vehicles sales to households are subtracted. The value calculated serves as an indicator of capital expenditure on motor vehicles by the private and general government sectors, and are obtainable seven weeks after the end of the reference period. Import data on other transport equipment are obtained from the South African Revenue Service (SARS) on a monthly basis, with a one month lag, and BOP adjustments are applied, which, are available on a monthly basis.

The imports of ICT equipment, excluding parts are used as the control total for capital spending on ICT equipment by all institutional units. Capital spending on ICT by private enterprises and public corporations is residually derived by subtracting capital spending on ICT equipment by the general government sector as well as ICT purchases by the household sector.

The Commodity or Product Flow Method<sup>41</sup> is used to estimate capital expenditure on other machinery and equipment (excluding transport and ICT equipment). The manufacturing sales of machinery and equipment, by specific SIC 3 enterprises from the P3041.2, are used as indicators of domestic production (or output) of machinery and equipment. Further, data on net imports, an SUT based trade margin, an adjustment for the change in wholesale inventories and a component that measures the consumption of machinery and equipment by households from the household final consumption expenditure (HFCE) component, are also included. This provides an estimate of capital expenditure on machinery and equipment by all institutional sectors, including general government (*see tables 3.3.5 and 3.3.6 below for an illustrative supply and use table, at purchaser's prices*).

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<sup>41</sup> *The formula used is as follows: output + imports = intermediate consumption + final consumption + capital formation + exports (SNA 2008, 14.4).*

**Table 3.3.5: Supply and Use tables - Supply of products**

Supply of products		Total supply at purchaser prices	Trade & transport margins	Taxes less subsidies	Total supply at basic price	Total industry (domestic production) OUTPUT	Imports
	<b>Manufacturing - Products (by CPC section)</b>						
1.	Engines	120,0	10,0	5,0	105,0	20,0	85,0
2.	Electrical machinery	20,0	5,0	3,0	12,0	8,0	4,0
3.	Computers	10,0	2,0	2,5	5,5	2,0	3,5
	<b>Total</b>	<b>150,0</b>	<b>17,0</b>	<b>10,5</b>	<b>122,5</b>	<b>30,0</b>	<b>92,5</b>

**Table 3.3.6: Supply and use tables – use of products**

Use of products		Total supply at purchase prices	Taxes less subsidies	Intermediate consumption (total industry)	Exports	Final consumption expenditure	Gross fixed capital formation	Changes in inventories
	<b>Products (by CPC section)</b>							
	<b>Manufacturing - Total uses</b>							
1.	Engines	120,0	x	20,0	40,0	20,0	30,0	10,0
2.	Electrical machinery	20,0	x	5,0	5,0	5,0	3,0	2,0
3.	Computers	10,0	x	5,0	2,0	1,0	0,0	2,0
	<b>Total</b>	<b>150,0</b>	<b>x</b>	<b>30,0</b>	<b>47,0</b>	<b>26,0</b>	<b>33,0</b>	<b>14,0</b>

Estimates of intellectual property products (IPPs) which cover research and development, mineral exploration and evaluation, computer software and databases, and entertainment, literary or artistic originals are based on quarterly estimates provided by the SARB<sup>42</sup>. This is also the same for estimates of cultivated biological

<sup>42</sup>These estimates will be replaced with official ones when they become available. For example, the QFS provides estimates of computer software and research and development. The AFS also provides estimates of mineral exploration and evaluation. As the AFS has broader coverage than the QFS, the AFS detail is used to split the QFS estimates in line with the asset types listed in

resources. These estimates are being used provisionally until such a time that they are replaced with independent estimates prepared by Stats SA.

The System of National Accounts requires that transfer costs, which represent the costs of transferring the ownership of fixed or non-financial assets, be capitalised. These costs include conveyance fees, real estate commissions, transfer duties and deeds levies. The published estimates of levies charged for property registrations from the Deeds Office, the QFS turnover for SIC 842 (which is used as a proxy to estimate estate agent commissions), and the conveyance fees (estimated using the deeds levies) as well as transfer duty estimates from SARS are used to estimate transfer costs. The Deeds Office data are published on a monthly basis with a 1 month lag.

### **3.3.5 Constant price estimates - deflators**

Price indices are used to derive real value estimates (i.e. without the effect of inflation) of national accounts aggregates of the goods and services account (System of National Accounts, 15.95). For GFCF, real value estimates are produced using a combination of CPIs, PPIs, both domestic and foreign; and Work Group Indices (WGIs) or Contract Price Adjustment Provisions (CPAP) prices, which measure certain construction industry input prices, such as those for concrete works and mechanical services.

GFCF totals are broken down by the type of asset purchased and construction work put in place. The value of the assets are converted into volume estimates by using appropriate price indices (*see section 3.3.2 for a list of asset types for which deflators are estimated*).

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*section 3.3.2. No estimates of capital spending on entertainment, literary or artistic originals are included in GFCF. These will be included when source data becomes available.*

For the time being, quarterly current value estimates of capital expenditure on research and development, computer software, mineral exploration and evaluation, and cultivated biological resources are estimated by the SARB. The conversion of the current-prices data into volume data, however, relies on deflators developed by Stats SA.

Tables 3.3.7 and 3.3.8 provide further details as well as operational details for the deflators by asset type. Frequency and contact details of the source data providers are amongst the information shown.

Table3.3.7: Data sources for GFCF deflators by asset type		
Asset type	Deflator & unit of measurement	Source
<b>Residential buildings</b>	<p><i>All institutional unit types</i>                      CPAP Workgroup Index 180 for Lump sum contracts                      Index 1991 = 100</p> <p>QES Wage Price Index (WPI)                      Index 2010 = 100</p>	<p><b>Statistics South Africa</b>                      P0151 - CPAP                      P0271 – QES                      P0142.1 – PPI</p>
<b>Non-residential buildings</b>	<p><i>All institutional unit types</i>                      CPAP Workgroup Index 181 for Commercial &amp; Industrial buildings                      Index 1991 = 100</p> <p>QES WPI                      Index 2010 = 100</p>	
<b>Construction works</b>	<p><i>All institutional unit types</i>                      SAFCEC Material Index                      Index 2012 = 100                      CPAP Materials Index                      Index 1991 = 100                      PPI specific Industries <sup>43</sup>                      Index 2012 = 100                      QES WPI                      Index 2010 = 100</p>	
<b>Transport equipment</b>	<p><i>All institutional unit types</i>                      CPI for new motor vehicles                      Index 2000 = 100 &amp; 2012 = 100</p> <p>Exchange rate adjusted PPIs for Euro area and US for other transport equipment                      Index 2007 = 100</p>	<p><b>Statistics South Africa</b>                      P0141 – CPI</p> <p><b>Bureau of Labour Statistics</b>  <a href="http://www.bls.gov">www.bls.gov</a>  <b>Eurostat</b>  <a href="http://ec.europa.eu/eurostat">http://ec.europa.eu/eurostat</a>                      PPI</p>

<sup>43</sup> Further detail in terms of what these indices are comprised of are provided under the methodological section.

Table3.3.7: Data sources for GFCF deflators by asset type		
Asset type	Deflator & unit of measurement	Source
<b>ICT equipment</b>	<p><i>All institutional unit types</i>                      Exchange-rate adjusted US CPI computer and peripheral equipment                      Exchange-rate adjusted US CPI for telephones and telefaxes                      Exchange-rate adjusted US CPI for radio and televisions                      Index 2007 = 100</p>	<p><b>Bureau of Labour Statistics</b>  <a href="http://www.bls.gov">www.bls.gov</a>                      CPI</p>
<b>Machinery and equipment</b>	<p><i>All institutional unit types</i>                      PPI for electrical machinery and apparatus                      Index 2000 = 100 &amp; 2012 = 100                      PPI for non-electrical machinery and equipment<sup>44</sup>                      Index 2000 = 100 &amp; 2012 = 100                      Exchange-rate adjusted PPIs for UK and Euro area                      Index 2010 = 100</p>	<p><b>Statistics South Africa</b>  <b>P0142.1 – PPI</b></p> <p><b>Eurostat</b>  <a href="http://ec.europa.eu/eurostat">http://ec.europa.eu/eurostat</a></p>
<b>Intellectual property products</b>	<p><i>All institutional unit types</i>  <b>Research and development</b>                      No specific deflator is available. A production-based GDP deflator is used                      Index 2010 = 100</p>	<b>Statistics South Africa</b>
	<p><i>Private enterprises only</i>  <b>Mineral exploration and evaluation</b>                      Construction Works deflator                      Index 2010 = 100</p>	
	<p><i>All institutional unit types</i>  <b>Computer software</b>                      No specific deflator is available. An average GFCF IPD is used                      Index 2010 = 100</p>	
<b>Cultivated biological resources</b>	<p><i>All institutional unit types</i>                      PPI for live animals                      Index 2012 = 100</p>	<p><b>Statistics South Africa</b>  <b>P0142.1 – PPI</b></p>
<b>Transfer costs</b>	<p><i>Private enterprises only</i>                      Volume index based on the count of transactions<sup>45</sup>. The price for transfer costs is derived implicitly.                      Index 2010 = 100</p>	<b>Deeds Office</b>

<sup>44</sup> The Methods section provides more information on the composition of this item.

### **3.3.6 Annual estimates**

#### **a. General government**

The annual estimates for general government by level of government and asset type are available from the P9101. However, the P9101 provides estimates of the purchases of non-financial assets and not the sales of these assets. The estimates of the sales of non-financial assets are obtained from Stats SA's GFS division, for all levels of government except municipalities, whose data are available from the Local and Provincial Government Institutions (LPGI) division, responsible for the P9101.

#### **b. Private enterprises and public corporations**

##### **i. Non-financial private enterprises and public corporations**

The AFS and LSS provide annual estimates of capital spending on non-financial assets, for private non-financial enterprises; while the P9101 provides annual estimates for public corporations. Financial year estimates are converted to calendar year estimates using a detailed calendarisation process which makes use of the QFS capital expenditure data by industry and financial year end. Purchases and sales of non-financial assets can be found in the AFS, while the P9101 provides estimates of purchases of non-financial assets. Capital spending on research and development, total cultivated biological resources and computer software, are currently obtained from the SARB. These data series will be replaced with independent estimates as soon as available.

##### **ii. Private financial enterprises**

The annual estimates of purchases and sales of non-financial assets by private financial enterprises engaged in financial intermediation and insurance activities are provided by SARB as the regulatory authority of such enterprises.

## **3.4 Changes in inventories**

### **3.4.1 Introduction**

Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period (System of National Accounts, 2008, 10.118). The inventories may be materials and supplies held as inputs by producers, output as yet unsold, or products held by wholesale and retail traders for resale (System of National Accounts, 2008, 3.178).

### **3.4.2 Composition of changes in inventories**

Changes in inventories comprise the following categories:

- Raw materials comprising components for processing, packaging materials, fuel, consumables and maintenance stock.
- Work in progress consists of goods used in the process of manufacturing or work that has been partially done, but which has not yet been completed at the end of the quarter.
- Finished goods include manufacturer's completed goods and goods purchased for resale, not sold at the end of the quarter.

Changes in inventories are classified according to the Standard Industrial Classification of all Economic activities (SIC) (1993).

### 3.4.3 Overview of source data

Changes in inventories are estimated based on opening and closing book values (BVs) collected by sample surveys produced by Stats SA, for various industries such as manufacturing industry<sup>46</sup>, construction, trade and community, social and personal industries, amongst others. For example, the QFS or P0044 reports estimates of income, revenue, capital expenditure and research and development, amongst others, on a quarterly basis. In addition, the survey also collects data on opening and closing book values (BVs) of inventories (*see table 3.4.2 below for a list of source data used*).

The P0044 survey serves as the primary source for most industries, except for the agricultural, mining and a part of the manufacturing industry. In order to estimate changes in inventories by industry, preliminary unweighted QFS data are used instead of weighted QFS data, due to their timeliness. The unweighted data are available 7 weeks after the end of the reference period, making them more suitable. The weighted data are however only available 12 weeks after the end of the reference period. Further, the use of weighted QFS data leads to significant volatility in the estimates of changes in inventories, due to the weights used for enterprise size groups<sup>47</sup> 2-4. In addition, the reporting of smaller enterprises is often of poor quality, as smaller firms do not usually keep formal quarterly inventory registers. As a result, changes in inventories are estimated using only unweighted data of size group 1 enterprises.

The QFS dataset comprises 5 000 enterprises in total, of which size group 1 enterprises comprise just over half of the total. As such, a coverage adjustment factor based on closing stock AFS levels is made for the under-coverage. Agriculture

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<sup>46</sup> *Estimates of the manufacturing industry are split between raw materials, work-in-progress and finished stocks. Raw materials estimates are based on the QFS data while finished stock uses monthly manufacturing data.*

<sup>47</sup> *Size groups are determined by the Department of Trade and Industry (DTI) out off points based on turnover where size group 1 represents the largest and size group 4 represents the smallest enterprises.*

estimates are obtained from the Department of Agriculture (DOA) at current and constant prices. These estimates only cover livestock inventories.

<b>Table 3.4.1: Data sources for changes in inventories by industry</b>			
<b>Industry</b>	<b>Indicator variable &amp; unit of measurement</b>	<b>Current price series</b>	
		<b>Quarterly</b>	<b>Annual</b>
<b>Agriculture</b>	Changes in inventories <sup>48</sup> at current and constant prices R'000	<b>Department of Agriculture</b>	Sum of four quarters
<b>Mining and quarrying</b>	Production and sales values R'000	<b>Department of Minerals Resources</b>	Sum of four quarters
<b>Manufacturing – finished stock</b>	Opening and closing stock BVs at current prices R'000	<b>Statistics South Africa</b> <b>P3041.2 - Manufacturing: Production and Sales</b>	Sum of four quarters
<b>Manufacturing – raw materials</b> (including work-in-progress)	Opening and closing book values at current prices R'000	<b>Statistics South Africa</b> <b>P0044 – Quarterly Financial Statistics</b>	<b>Statistics South Africa</b> <b>P0021 – Annual Financial Statistics</b>
<b>Electricity, gas &amp; water supply</b>			
<b>Construction</b>			
<b>Trade</b>			
<b>Transport, storage &amp; communication</b>			
<b>Financial intermediation, insurance etc.</b>			
<b>Community, social &amp; personal services</b>			

<sup>48</sup>Each category of inventories is defined in the main text below

**Table 3.4.2: Operational characteristics of source data, by industry**

Industry	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
<b>Agriculture</b>	<b>INV001</b>	Opening and closing inventories Quarterly	12 weeks after reference period	Preliminary estimates are obtained 3 to 4 weeks before final publication	Data revised quarterly	<b>Department of Agriculture</b>
<b>Mining and quarrying</b>	<b>INV002</b>	Production and sales values Monthly	5 weeks after reference period	Preliminary estimates are obtained 3 to 4 weeks before final publication	N/A	<b>Department of Minerals Resources</b>
<b>Manufacturing– finished stock</b>	<b>INV003</b>	Closing stock Monthly	5 weeks after reference period	Preliminary estimates are obtained 3 to 4 weeks before final publication	N/A	<b>Statistics South Africa P3041.2 – Manufacturing: production and sales</b>
<b>Manufacturing – raw materials (including work-in-progress)</b>	<b>INV004</b>	Opening and closing book values Quarterly	12 weeks after reference period	Preliminary estimates are obtained 3 to 4 weeks before final publication	Data revised quarterly	<b>Statistics South Africa QFS</b>
<b>Electricity, gas &amp; water supply</b>	<b>INV005</b>					
<b>Construction</b>	<b>INV006</b>					
<b>Trade</b>	<b>INV007</b>					
<b>Transport, storage &amp; communication</b>	<b>INV008</b>					
<b>Financial intermediation, insurance etc.</b>	<b>INV009</b>					
<b>Community, social &amp; personal services</b>	<b>INV0010</b>					

### 3.4.4 Estimation methods

#### 3.4.4.1 Current price estimates

Inventories are stores of goods for use in the production process to be processed, transformed or sold but not used directly at the time of purchase or production. Changes in inventories are the differences between closing and opening inventories, while the stock of inventories at a point of time is referred to as book value (BV) inventories.

Current-price estimates of changes in inventories are derived from BVs through the Inventory Value Adjustment (IVA) process; a process where the average price of the current quarter is applied to the constant price changes in inventories to arrive at current price estimates of inventory change.

Each industry keeps different types of stock, leading to different average ages of stock. For instance, the average age of inventories kept by a food retailer will be much shorter than that of a furniture retailer. As a result, an inventory turnover ratio, expressed as QFS closing BV divided by the QFS turnover multiplied by 3, is calculated in order to account for the time that the stock would have been kept in inventories. The quotient is multiplied by 3 in order to represent the average age of inventories in months. The inventory turnover ratio is then used to determine the number of months to be used in constructing the deflator. For example, if the inventory turnover ratio is two months then the deflator used will be an average of the last two months of the quarter being estimated. This assumes that businesses use a FIFO (first in first out) inventory accounting method.

Production and inventory data for the mining industry rely a great deal on production data from the Department of Mineral Resources (DMR). The DMR data are derived from a census of some 1,700 mining operations, the management of which have mining rights in South Africa. The estimates are grouped according to the type of

mineral mined. There are eight groupings representing about 90 percent of the total production. The groupings in question are coal, chromite, iron ore, manganese, copper, diamonds, and gold and platinum group metals. There are four broadly defined sets of methods designed to estimate the relevant data for the eight groupings, depending on the grouping. The different methods are a result of the type of trade each commodity is typically engaged in. Some of the ores (for instance, gold) have virtually no local sales whereas others do (coal).

### **3.4.5 Constant-price estimates – deflators**

Depending on the industry or sub-industry under consideration, BVs are deflated by a price index appropriate to the stocks held by that industry or sub-industry. Appendix 4 lists the different industries/sub-industries with the corresponding deflators used. Prices used for deflating and revaluing BVs are predominantly the CPI and the PPI, with some use of unit value indices (UVIs) in mining and manufacturing. The deflator for the closing BV of one period is also used as the deflator for the opening BV of the subsequent period.

Due to the fact that stocks of inventories can be held over a long period of time, the gains and losses that result from changes in prices while the stock is being held are also determined in the form of inventory value adjustments (IVAs). These holding gains and losses which are implicit in the reported BV data; do not form part of the changes in inventory estimates on a national accounts basis and are thus subtracted from the estimates.

## **3.5 Rest of the world - Trade**

### **3.5.1 Introduction**

Trade statistics record transactions between resident and non-resident institutional units. These transactions relate to goods, for which demand exists and over which ownership rights can be established and whose ownership can be transferred

between institutional units; and services, which are carried out by one institutional unit for the benefit of another (System of National Accounts, 2008: 6.15 and 6.17). The Customs authority in South Africa is the South African Revenue Service (SARS) which is the source of data for merchandise trade, or trade in goods. The South African Reserve Bank (SARB) is responsible for determining the balance of payments (BOP) position of the country and is the source of trade in services data as well as the BOP adjustments made to merchandise trade.

Merchandise trade is compiled in accordance with rules established by the United Nation's Statistics Division (UNSD) in two manuals, namely the International Merchandise Trade Statistics (IMTS): Concepts and Definitions manual and the Balance of Payments Manual (ed 6). The latter has been made fully compatible with the SNA's standards, in that it uses the change of ownership basis; while the former differs at the margin as it follows the timing of customs processing; largely to accommodate the traditional administrative and regulatory functions of Customs. The SARB has the authority and the sources of information required to adjust SARS's data for BOP purposes. The Harmonised System (HS) is the international merchandise trade goods classification system developed and maintained by the World Customs Organisation (WCO), and is used by SARS to classify goods.

### **3.5.2 Composition of international trade**

International trade estimates are composed of exports and imports of goods including BOP adjustments as well as exports and imports of services. The relative importance of exports and imports in expenditure-based GDP are indicated in the tables below.

**Table 3.5.1: International trade composition, current prices (R billion)**

Exports	2011	2012	2013	2014	Weight* (%)
<b>Merchandise trade</b>	794,7	827,8	933,5	1 004,5	84,6
<b>Services trade</b>	126,2	144,8	162,2	182,8	15,4
<b>Exports of goods and services</b>	921,0	967,2	1 093,1	1 188,8	
<b>Gross Domestic Product</b>	<b>3 020,3</b>	<b>3 244,8</b>	<b>3 538,7</b>	<b>3 796,8</b>	
<b>Share of GDP (%)</b>	30,6	30,0	31,4	31,7	

\*Weight calculations are based on 2014 current price data.

**Table 3.5.2: International trade composition, current prices (R billion)**

Imports	2011	2012	2013	2014	Weight (%)
<b>Merchandise trade</b>	743,8	859,1	1 003,3	1 072,5	85,5
<b>Services trade</b>	150,9	155,2	174,2	184,8	14,7
<b>Imports of goods and services</b>	896,6	1 014,4	1 177,8	1 254,5	
<b>Gross Domestic Product</b>	<b>3 020,3</b>	<b>3 244,8</b>	<b>3 538,7</b>	<b>3 796,8</b>	
<b>Share of GDP (%)</b>	29,7	31,3	33,3	33,0	

\*Weight calculations are based on 2014 current price data.

### 3.5.3 Overview of source data

### 3.5.4 Estimation methods

#### 3.5.4.1 Current price estimates

##### a. Trade in goods and balance of payments adjustments<sup>49</sup>

A detailed merchandise trade dataset from SARS is uploaded onto a Stats SA Statistical Analysis Systems (SAS) library every month with a lag of five or six weeks. For example, October trade data would be uploaded in the first or second week of December. The monthly dataset includes revisions to the last 24 months. Thus, the estimates compiled each current quarter include revisions for this period. This detailed HS data set is available from January 2009. Since trade data are used in the compilation of gross fixed capital formation estimates, specific groupings are used. Merchandise trade estimates are published on an HS section level by SARS, but only the total of goods and services is published by Stats SA.

<sup>49</sup> See Appendix 4 for further details on South Africa's trade and balance of payments system

Trade merchandise estimates are calculated based on the date of acceptance of the customs declaration by the Customs Office, provided by SARS which is considered to be a good approximation of the time of change of ownership.

The Customs data are on an IMTS basis i.e. border-crossing, rather than the desired SNA change of ownership convention. More specifically, “the main conceptual difference is that international merchandise trade statistics are based on the general principle to record all goods that add to or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory, whereas the recording of transactions in the balance of payments is based on the principle of change of ownership between residents and non-residents”<sup>50</sup>. These differences are addressed to the extent possible in the BOP adjustments and are outlined in the IMTS and BOP manuals.

#### **b. Trade in services**

Trade in services estimates are also compiled by the SARB’s BOP Division and are estimates of the services exported by residents to non-residents and imported by residents from non-residents. There are 13 common services categories across exports and imports. The broad services categories are travel, transportation and other services. These data (or preliminary estimates thereof) are received from the SARB as soon as possible after the end of the reference quarter for inclusion in the estimation of quarterly GDP.

#### **3.5.5 Constant price estimates – deflators**

There are two kinds of deflators used to derive imports and exports of goods at constant prices: prices indices and unit value indices (UVI’s). The UVIs are used for homogeneous products, for both exports and imports. For more heterogeneous products, alternative deflators, such as producer price indices (PPIs) are used for exports. For imports, in the absence of import price indices, exchange-rate adjusted foreign PPIs are used. Using two types of deflator is a consequence of the very broad product descriptions derived from the Harmonised System (HS). Deflators

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<sup>50</sup> *International Merchandise Trade Statistics – Concepts and Definitions (2010)*

derived from these product descriptions are much too broad for use as price indicators. Whereas a UVI for coal or iron is a usable approximation to a price indicator a UVI for imports of computers cannot be used for price purposes.

The mix of deflators varies for exports and imports. On the export side, domestic PPIs are used as proxy prices, since domestic producer price change is expected irrespective of the residence of the buyer. On the import side, use is made of foreign-exchange rate adjusted foreign CPI instead of UVIs for ICT equipment (on the grounds that quality change would be better captured in these prices).

The approach that governs the choice of UVIs is to compensate for the generality of the product descriptions by also considering attributes such as the ID of the importer and most importantly the country of origin. Examples of the use of strictly defined UVI's are the imports of petroleum products (crude oil, petrol, and diesel) and the imports of motor vehicles. The limited use of UVI's for exports includes their application to the exports of certain mineral products (iron ore, coal, manganese, copper, PGMs)<sup>51</sup>. In some instances different groupings will use the same price, as that price is deemed to be the best currently available proxy.

For imports of services deflators, a similar calculation to the exchange rate-adjusted price for merchandise imports is used, with the difference being in the use of foreign CPIs rather than PPIs. For imports of transport services deflation, the exchange-rate-adjusted foreign CPI price is supplemented with the CPI for fuel. For imports of travel services, the deflator is compiled from the exchange-rate-adjusted CPIs of five overseas countries: France, Germany, the Netherlands, the UK and the US.

For exports of services deflators, use is made of South African average wage growth by industry. Similarly to the import side, for exports of transportation services the average wage growth is supplemented with the CPI for fuel. For the deflation of

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<sup>51</sup> *Currently, UVIs for coal, manganese and copper are based on Department of Mineral Resources (DMR) data, but UVIs will be developed from SARS data.*

exports of travel services, a weighted CPI consisting of a basket of travel and tourism related products is compiled.

**Table 3.5.1: Data sources for international trade, by trade type**

Trade type	Relative importance of trade type (%)	Indicator variable & unit of measurement	Current-price series	
			Quarterly	Annual
Merchandise	84,6	Exports of goods at current prices Rands	South African Revenue Service	South African Reserve Bank
	85,5	Imports of goods at current prices Rands		
Services	15,4	Exports of services at current prices Rands	South African Reserve Bank	
	14,7	Imports of services at current prices Rands		
BOP adjustments	N/A	BOP adjustments at current prices Rands <i>For merchandise trade only</i>		

**Table 3.5.2: Operational characteristics of source data, by trade type**

Trade type	Code	Frequency	Lag	Retrieval schedule	Revisions and sample refreshment	Data provider
Merchandise	XG	Monthly	5 weeks after reference month	Preliminary data obtained 5 weeks following the reference period	Previous 24 months are revised in each monthly dataset	South African Revenue Service
	MG					
Services	XS	Quarterly	6 weeks after the reference quarter	Preliminary data obtained 5 weeks following the reference period	Data revised quarterly	South African Reserve Bank
	MS					
BOP adjustments	XB	Monthly	6 weeks after the reference quarter	Preliminary data obtained 5 weeks following the reference period	Data revised quarterly	South African Reserve Bank
	MB					

#### **4. Benchmarking**

Benchmarking methods are used in time series analysis whenever a low frequency series contains more reliable information than the high frequency series to which it is related, but there is no set way to allocate to the latter the gap that separates it from the former. Thus, if there is an annual series (low frequency) of say all fees – annual and quarterly - paid to all secondary schools and a quarterly series (high frequency) that measures exclusively those fees paid at quarterly intervals; the inconsistency between the values of the former and the latter has to be eliminated by the least disturbing manner to quarter-on-quarter changes. A satisfactory benchmarking procedure must satisfy two requirements at the same time:

- a. Preserve as much as possible the short-term movements in the quarterly source data while satisfying the constraint imposed by the annual data; and
- b. Ensure that prior to the publication of the annual number for the current year, the extrapolated sum of the adjusted quarterly data for the current year embodies all the relevant experience recorded in the past.

For all components of expenditure-based GDP, the Denton proportional benchmarking method keeps the movements in the benchmarked quarterly series roughly proportional to those in the quarterly indicator series, minimising the sum of the squared differences subject to the constraint imposed by the recorded or expected annual total. When the annual data become available the extrapolated annual estimates are revised, and the quarterly indicators are benchmarked to the new annual estimates. Incorporation of new annual data for one year generates revisions of quarterly data for neighbouring years.

#### **5. Seasonal Adjustment**

Seasonal adjustment is a process designed to decompose a time series – typically an economic statistic such as monthly household expenditure or quarterly company profits or total exports of goods - into components classified by the frequency of their cyclical changes. These range from very low and low frequency cycles that combine three to five years business cycles with much longer cycles and are commonly

referred to as the “trend –cycle”. The calendar, to which economic time series are also sensitive, is a complex composite contributing cycles of one, seven and more year cycles created by the unequal length of the months. In addition, the effect of predictable but moveable holidays such as Easter, the cyclical changes in the year to year structure of the week, and the four year cycle created by the appearance of an extra day, although not necessarily the same day of the week every four years, are also considered. Lastly, the process of seasonal adjustment identifies a residual known as the ‘irregular’ which cannot be assigned to any identifiable and repetitive cause but is typically of very high frequency meaning that its changes tend to average to zero over short periods of time.

The process of seasonal adjustment targets seasonal and calendar contributions to the overall change, identifies them precisely and removes them. The process of removal can be direct or indirect. Direct seasonal adjustment consists in identifying the seasonal contribution to the changes in a particular time-series and removing it. Indirect seasonal adjustment consists in applying the principle that the sum of the seasonally adjusted components of a particular time series is also seasonally adjusted. Generally, the indirect seasonal adjustment model is applied to all components of the expenditure-based GDP for both current and constant price estimates.

The actual process of seasonal adjustment - X-12-ARIMA – is a combination of an iterative process developed by the US Bureau of the Census with a technique developed in Statistics Canada - Autoregressive Integrated Moving Averages (ARIMA) which provides more stable forecasts of future seasonal contributions to time series. The technique is well described in technical literature and users interested in its details are directed to the website of the Australian Bureau of Statistics: [www.abs.gov.au](http://www.abs.gov.au).

## 6. APPENDIXES

<b>Appendix 1: Acronyms and descriptions</b>	
<b>Acronym</b>	<b>Description</b>
<b>ARIMA model</b>	Autoregressive Integrated Moving Average model
<b>BLS</b>	Bureau of Labour Statistics
<b>BOP</b>	Balance of Payments
<b>BV</b>	Book Value
<b>GFCE</b>	Government Final Consumption Expenditure
<b>COFC</b>	Consumption of Fixed Capital
<b>COICOP</b>	Classification of Individual Consumption by Purpose
<b>CPAP</b>	Contract Price Adjustments Provisions
<b>CPI</b>	Consumer Price Index
<b>DHET</b>	Department of Higher Education and Training
<b>DOA</b>	Department of Agriculture
<b>DoD</b>	Department of Defence
<b>eNATIS</b>	Electronic National Traffic Information System
<b>DTI</b>	Department of Trade and Industry
<b>Eurostat</b>	European Statistics
<b>EU</b>	European Union
<b>FOB</b>	Free On Board
<b>GDP</b>	Gross Domestic Product
<b>GFCF</b>	Gross Fixed Capital Formation
<b>GFS</b>	Government Finance Statistics
<b>FISIM</b>	Financial Intermediation Services Indirectly Measured
<b>HFCE</b>	Household Final Consumption Expenditure
<b>HS</b>	Harmonised System
<b>IES</b>	Income and Expenditure Survey
<b>IMF</b>	International Monetary Fund
<b>IPP</b>	Intellectual Property Products
<b>IVA</b>	Inventory Value Adjustment
<b>MRN</b>	Movement Reference Number
<b>MTS survey</b>	Motor Trade Sales Survey
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>PGM</b>	Platinum Group Metals
<b>PPI</b>	Producer Price Index
<b>QES</b>	Quarterly Employment Survey
<b>QFS</b>	Quarterly Financial Statistics
<b>RTS survey</b>	Retail Trade Sales Survey
<b>SAFCEC</b>	South African Federation of Civil Engineers and Contractors
<b>SARB</b>	South African Reserve Bank
<b>SARS</b>	South African Revenue Service
<b>SAS</b>	Statistical Analysis Software
<b>SIC</b>	Standard Industrial Classification for all Economic activities
<b>Stats SA</b>	Statistics South Africa
<b>SUTs</b>	Supply and Use Tables
<b>LSS</b>	Large Sample Survey
<b>LTS</b>	Land Traffic Survey
<b>NAAMSA</b>	National Association of Automobile Manufacturers in South Africa
<b>TSA</b>	Tourism Satellite Account
<b>UNIMTS</b>	United Nation's International Merchandise Trade Statistics
<b>UVI</b>	Unit Value Index
<b>VAT</b>	Value Added Tax
<b>WCO</b>	World Custom Organisation
<b>WGs</b>	Work Group Prices
<b>WPI</b>	Wage Price Index

<b>Appendix 2: HFCE Deflators</b>	
<b>Expenditure category : 2-digit COICOP level</b>	<b>Deflator</b>
<b>Food</b>	CPI food
<b>Non-alcoholic beverages</b>	CPI non-alcoholic beverages
<b>Alcoholic beverages</b>	CPI alcoholic beverages
<b>Tobacco</b>	CPI tobacco
<b>Narcotics</b>	CPI tobacco
<b>Clothing</b>	CPI clothing
<b>Cleaning, repair and hire of clothing</b>	CPI miscellaneous goods and services
<b>Shoes and other footwear</b>	CPI footwear
<b>Repair and hire of footwear</b>	CPI miscellaneous goods and services
<b>Actual rents paid by tenants</b>	CPI actual rentals paid by tenants
<b>Imputed rentals for housing</b>	CPI imputed rentals
<b>Materials for the maintenance and repair of</b>	CPI materials for the maintenance and repair of
<b>Services for maintenance and repair of the</b>	CPI miscellaneous goods and services
<b>Water supply</b>	CPI water supply
<b>Refuse collection</b>	Combination of CPI water supply and CPI refuse
<b>Sewage collection</b>	Combination of CPI water supply and CPI refuse
<b>Other services relating to the dwelling</b>	CPI other services relating to the dwelling
<b>Electricity</b>	CPI electricity
<b>Gas</b>	CPI electricity
<b>Liquid fuels</b>	CPI liquid fuels
<b>Solid fuels</b>	CPI liquid fuels
<b>Furniture and furnishings</b>	CPI furniture and furnishings
<b>Carpets and other floor coverings</b>	Combination of CPI furniture and furnishings and
<b>Repair of furniture, furnishings and floor</b>	CPI miscellaneous goods and services
<b>Household textiles</b>	CPI household textiles
<b>Major household appliances whether electric</b>	CPI major household appliances whether electric
<b>Small electric household appliances</b>	CPI small electric household appliances
<b>Repair of household appliances</b>	CPI miscellaneous goods and services
<b>Glassware, tableware and household utensils</b>	CPI glassware, tableware and household utensils
<b>Major tools and equipment</b>	CPI small tools and miscellaneous accessories
<b>Small tools and miscellaneous accessories</b>	CPI small tools and miscellaneous accessories
<b>Non-durable household goods</b>	CPI non-durable household goods
<b>Domestic services and household services</b>	CPI domestic services and household services
<b>Pharmaceutical products</b>	CPI pharmaceutical products
<b>Other medical products</b>	CPI pharmaceutical products
<b>Therapeutic appliances and equipment</b>	CPI pharmaceutical products
<b>Medical services</b>	CPI medical services
<b>Dental services</b>	CPI dental services
<b>Paramedical services</b>	CPI hospital services
<b>Hospital services</b>	CPI hospital services
<b>Motor cars</b>	CPI purchase of new vehicles
<b>Motorcycles</b>	CPI purchase of new vehicles
<b>Bicycles</b>	CPI purchase of new vehicles
<b>Animal drawn vehicles</b>	CPI purchase of new vehicles
<b>Used cars profit margin</b>	CPI purchase of new vehicles
<b>Spare parts and accessories for personal</b>	CPI spare parts and accessories for personal
<b>Fuels and lubricants for personal transport</b>	CPI fuels and lubricants for personal transport

<b>Appendix 2: HFCE Deflators</b>	
<b>Maintenance and repair of personal transport</b>	CPI maintenance and repair
<b>Other services in respect of personal</b>	CPI other services in respect of personal
<b>Passenger transport by railway</b>	CPI passenger transport by railway
<b>Passenger transport by road</b>	CPI passenger transport by road
<b>Passenger transport by air</b>	CPI passenger transport by air
<b>Passenger transport by sea and inland</b>	CPI transport
<b>Other purchased transport services</b>	CPI transport
<b>Postal services</b>	CPI postal services
<b>Telephone and telefax equipment</b>	CPI (USA) telephone and telefax equipment
<b>Telephone and telefax services</b>	CPI telephone and telefax services
<b>Equipment for the reception, recording and</b>	CPI equipment for the reception, recording and
<b>Photographic and cinematographic</b>	CPI equipment for the reception, recording and
<b>Information processing equipment</b>	CPI (USA) information processing equipment
<b>Recording media</b>	CPI recording media
<b>Repair of audio-visual, photographic and</b>	CPI miscellaneous goods and services
<b>information processing equipment</b>	
<b>Major durables for outdoor recreation</b>	CPI equipment for the reception, recording and
<b>Musical instruments and major durables for</b>	CPI games, toys and hobbies
<b>Maintenance and repair of other major</b>	CPI miscellaneous goods and services
<b>durables for recreation and culture</b>	
<b>Games, toys and hobbies</b>	CPI games, toys and hobbies
<b>Equipment for sport, camping and open-air</b>	CPI equipment for sport, camping and open-air
<b>recreations</b>	recreation
<b>Pets and related products</b>	CPI pets and related products
<b>Veterinary and other services for pets</b>	CPI pets and related products
<b>Recreational and sporting services</b>	CPI recreational and sporting services
<b>Cultural services</b>	CPI cultural services
<b>Games of chance</b>	Total CPI
<b>Books</b>	CPI newspapers and periodicals
<b>Newspapers and periodicals</b>	CPI newspapers and periodicals
<b>Miscellaneous printed matter</b>	CPI stationery and drawing materials
<b>Stationery and drawing materials</b>	CPI stationery and drawing materials
<b>Package holidays</b>	CPI accommodation services
<b>Pre-primary and primary education</b>	CPI pre-primary and primary education
<b>Secondary education</b>	CPI secondary education
<b>Tertiary education</b>	CPI tertiary
<b>Education not definable by level</b>	CPI education not definable by level
<b>Restaurants, cafés and the like</b>	CPI restaurants, cafés and the like
<b>Canteens</b>	CPI restaurants, cafés and the like
<b>Accommodation services</b>	CPI accommodation services
<b>Hairdressing salons and personal grooming</b>	CPI miscellaneous goods and services
<b>establishments</b>	
<b>Electric appliances for personal care</b>	CPI other appliances, articles and products for
<b>Other appliances, articles and products for</b>	CPI other appliances, articles and products for
<b>personal care</b>	personal care
<b>Prostitution</b>	CPI miscellaneous goods and services
<b>Jewellery, clocks and watches</b>	CPI jewellery, clocks and watches
<b>Other personal effects</b>	CPI other personal effects
<b>Social protection</b>	CPI social protection services

<b>Appendix 2: HFCE Deflators</b>	
<b>Life insurance</b>	SARB relevant implicit deflator
<b>Insurance connected with household content</b>	SARB relevant implicit deflator
<b>Insurance connected with health</b>	SARB relevant implicit deflator
<b>Insurance connected with transport</b>	SARB relevant implicit deflator
<b>FISIM</b>	SARB relevant implicit deflator
<b>Other financial service n.e.c</b>	SARB relevant implicit deflator
<b>Other services n.e.c</b>	CPI other services
<b>Receipts - abroad</b>	derived
<b>Non-residents - domestic</b>	derived

<b>Appendix 3: HFCE commodities with little or no adjustments needed</b>			
<b>HFCE subcomponent</b>	<b>Variables used</b>	<b>Adjustments</b>	<b>VAT</b>
<b>Purchase and operation of vehicles</b>			
<b>Commodities for the operation of vehicles</b>	<p>The following line items are used from the MTS:</p> <p>Income from the sales of accessories for the series 'Spare parts and accessories for personal transport equipment'.</p> <p>Income from fuel sales for the series 'Fuels and lubricants for personal transport equipment'.</p> <p>Workshop income for the series 'Maintenance and repair of personal transport equipment'.</p>	No adjustments	MTS is VAT exclusive, so a 14% mark-up for VAT is placed on these series in HFCE estimates
<b>Water supply, miscellaneous services relating to the dwelling and electricity</b>	Service charges for sales of water, sales of electricity, refuse removal charges, and sewerage and sanitation charges from the QFS of Municipalities	No adjustments	No adjustments
<b>Solid and liquid fuel</b>	<p>2010 annual SARB levels for solid and liquid fuels</p> <p>Growth rate from 'fuels and lubricants for personal transport equipment'</p>	No adjustments	No adjustments

Appendix 3: HFCE commodities with little or no adjustments needed continued			
HFCE subcomponent	Variables used	Adjustments	VAT
<b>Actual and imputed rentals for housing</b>	Constant stock of residential buildings	The constant price stock is separated into actual and imputed rent using SUT 2010 (benchmark year) annual proportions. These are inflated with CPI of actual and imputed rent to form the current price series.	No adjustments
<b>Insurance, FISIM, financial services n.e.c. and travel receipts and payments</b>	Insurance, FISIM, financial services n.e.c. and travel receipts and payments from SARB	No adjustments	No adjustments
<b>Games of chance</b>	Gross gambling revenue	No adjustments	No adjustments
<b>Medical services</b>	Turnover from sales of services from the top four enterprises in QFS for SIC 931 (Human health services) is used. The average coverage of these four enterprises is 58% of the SIC 931 industry (2012Q4 to 2013Q3).	No adjustments	Data from the survey are VAT exclusive. As these services are VAT exempt in South Africa, no VAT is placed on them for inclusion in HFCE
<b>Recreational and cultural services</b>	Turnover from sales of services from the top four enterprises in QFS for SIC 96 (Recreational, cultural and sporting activities) is used. The average coverage of selected enterprises, based on comparable AFS data, is 51% of the industry (2012Q4 – 2013Q3).	No adjustments	Data from QFS are VAT exclusive, so a 14% mark-up for VAT is placed on these series in HFCE estimates
<b>Package holidays</b>	Turnover from sales of services from the top two enterprises in QFS for SIC 7414 (Travel agency and related activities) is used. The coverage of these is 42% of the industry (2012Q4 – 2013Q3).	No adjustments	VAT of 14 per cent is added to the current estimates

<b>Appendix 3: HFCE commodities with little or no adjustments needed continued</b>			
<b>HFCE subcomponent</b>	<b>Variables used</b>	<b>Adjustments</b>	<b>VAT</b>
<b>Telephone and telefax services</b>	Turnover of the top seven enterprises in QFS for SIC 7520 is used. The average turnover coverage of these enterprises is 79,8% (2012Q4 to 2013Q3).	No adjustments	VAT of 14 per cent is added to the current estimates
<b>Air transportation services</b>	Turnover from the top five enterprises in QFS for SIC 7300 is used. The average turnover coverage of these five enterprises is 84,4% (2012Q4 – 2013Q3).	No adjustments	Data from QFS are VAT exclusive, so a 14% mark-up for VAT is placed on these series in HFCE estimates
<b>Passenger transport by railway and road</b>	Incomes from rail and road passenger transportation from the monthly Land Transport Survey	No adjustments	Data from the survey are VAT exclusive. As these services are VAT exempt in South Africa, no VAT is placed on them for inclusion in HFCE
<b>Restaurants and hotels</b>	Income from food and bar sales (Food and Beverages survey) is used for estimates of catering services  Income from accommodation (Tourist Accommodation survey) is used for HFCE estimates on accommodation services	No adjustments	Data from the survey are VAT exclusive, so a 14% mark-up for VAT is placed on these series in HFCE

**Appendix 4: Changes in inventories deflators**

<b>Industry/ Sub-industry</b>	<b>Deflator</b>
<b>Manufacturing – raw materials</b>	
<b>Food, beverages and tobacco</b>	PPI: Cereals and other crops
<b>Textiles, clothing, and leather goods</b>	PPI: Textiles and leather goods
<b>Paper and paper products</b>	PPI: Wood and paper products
<b>Sawmilling, planing of wood, wood products, publishing &amp; printing</b>	PPI: Paper and printed products
<b>Petroleum refineries/synthesisers &amp; processing of nuclear fuel</b>	PPI: Coal and gas
<b>Basic chemicals and other chemical products</b>	PPI: Basic and other chemicals
<b>Rubber, plastic and coke oven products</b>	PPI: Basic and other chemicals
<b>Other non-metallic mineral products</b>	PPI: Basic and other chemicals
<b>Basic metals and fabricated metal products</b>	PPI: Basic iron and steel
<b>Special purpose machinery, office, accounting and computing machinery</b>	PPI: Metals, machinery, equipment and computing equipment
<b>Electrical machinery and apparatus n.e.c</b>	PPI: Electrical machinery and apparatus, and subcomponents
<b>Radio, TV, communication equipment, medical and optical instruments, watches and clocks</b>	PPI: Electrical machinery and apparatus, and subcomponents
<b>Transport equipment</b>	PPI: Bodies for motor vehicles
<b>Furniture, recycling and manufacture n.e.c</b>	PPI: Other wood products
<b>Manufacturing – work in progress, finished goods, goods purchased for resale</b>	
<b>Food, beverages and tobacco</b>	PPI: Food products, beverages and tobacco products
<b>Textiles, clothing, and leather goods</b>	PPI: Textiles, clothing and footwear
<b>Paper and paper products</b>	PPI: Paper and printed products
<b>Sawmilling, planing of wood, wood products, publishing &amp; printing</b>	PPI: Wood and paper products
<b>Petroleum refineries/synthesisers &amp; processing of nuclear fuel</b>	PPI: Petrol
<b>Basic chemicals and other chemical products</b>	PPI: Chemical products
<b>Rubber, plastic and coke oven products</b>	PPI: Rubber and plastic products
<b>Other non-metallic mineral products</b>	PPI: Non-metallic mineral products
<b>Basic metals and fabricated metal products</b>	PPI: Basic and fabricated metals
<b>Special purpose machinery, office, accounting and computing machinery</b>	PPI: Metals, machinery, equipment and computing equipment

**Appendix 4: Changes in inventories deflators**

<b>Electrical machinery and apparatus n.e.c</b>	PPI: Electrical machinery and apparatus, and subcomponents
<b>Radio, TV, communication equipment, medical and optical instruments, watches and clocks</b>	PPI: General and special purpose machinery
<b>Transport equipment</b>	PPI: Transport equipment
<b>Furniture, recycling and manufacture n.e.c</b>	PPI: Furniture and other manufacturing
<b>Electricity, gas and water supply</b>	PPI: Coal and gas
<b>Construction</b>	PPI: Building and construction
<b>Trade</b>	
<b>Wholesale trade</b>	
<b>Agricultural, raw materials, livestock, food, beverages and tobacco</b>	PPI: Food products, beverages and tobacco products
<b>Non-agricultural intermediate products, waste and scrap</b>	PPI: Intermediate manufactured goods
<b>Machinery, equipment and supplies</b>	PPI: Metals, machinery, equipment and computing equipment
<b>Wholesale trade on a fee or contract basis and household goods and other</b>	Textiles, clothing and footwear
<b>Retail trade</b>	
<b>Food, beverages and tobacco</b>	CPI: Food and non-alcoholic beverages
<b>Pharmaceutical and medical goods, cosmetic and toilet articles</b>	CPI: Medical products
<b>Textiles, clothing, footwear and leather goods</b>	CPI: Clothing and footwear
<b>Household furniture appliances, articles and equipment</b>	CPI: Household contents and equipment
<b>Other trade in specialised stores, second-hand goods, retail trade not in stores and repair of personal and household goods</b>	CPI: Household contents and equipment; Clothing and footwear; Medical products
<b>Motor trade</b>	
<b>Motor parts</b>	PPI: Parts and accessories for motor vehicles and their engines
<b>Automotive fuel</b>	CPI: Petrol
<b>Sale of motor vehicles and motor cycles</b>	CPI: Purchase of vehicles
<b>Hotels and restaurants</b>	CPI: Food and non-alcoholic beverages; Alcoholic beverages and tobacco
<b>Transport</b>	PPI: Transport equipment
<b>Financial</b>	CPI: Books, newspapers and stationery
<b>Community</b>	CPI: Books, newspapers and stationery

## 7. Appendix 5: South Africa's system of trade and balance of payments adjustments

Statistics on exports and imports of goods are compiled by the Customs wing of SARS and subjected to a number of additional adjustments carried out by the SARB in line with the guidelines set out in the International Monetary Fund (IMF)'s Balance of Payments manual Rev. 6. The remarks below are largely taken from the SARS website (<http://www.sars.gov.za/ClientSegments/Customs-Excise/Trade-Statistics/Pages/Explanations-and-Notes.aspx>) and concern chiefly South Africa's system of trade or the way South Africa defines its Customs territory relatively to the territory over which the South African government exercises sovereignty

### System of trade:

#### UN IMTS 2010

The statistics on trade in goods are compiled by the Customs wing of SARS mostly in accordance with the guidelines laid out in the United Nations International Merchandise Trade Statistics: Concepts and Definitions 2010 (UN IMTS 2010) manual. Currently SARS follows a hybrid special system (*see IMTS 2010 for definition*), more relaxed special system as interpreted by member countries of the EU. The outstanding exception involves warehoused goods eventually destined for local consumption. Contrary to the special definition of territory, these goods are included the moment they are warehoused rather than when they cross the boundary for home use. However, goods imported and exported for processing are excluded from trade statistics as they should be in accordance with the special system. The exception to compliance consists in waving the right to change the valuation of goods declared in non-arms' length transactions.

#### Free-on-board (FOB)

SARS reports South Africa's trade statistics, both on exports and imports, as free-on-board (FOB). While this is the practice followed in North America and in Australia, the practice adopted by EU members is to report imports c.i.f. that is with the cost of freight and insurance included in the reported value.

### **Country code ZN – Origin of goods is unknown**

Country code ZN is described as “Origin of Goods is Unknown”. Most imports – 95% – claiming ZN as their origin consist of gold. Gold, due to legacy rules, is treated both as a good and as a country. It is therefore not possible to determine from published numbers where South Africa exports of gold are going to or where gold imports are coming from.

### **BOP adjustments:**

In addition, the SARB applies the following adjustments to the trade numbers.

#### **a. Specific BOP adjustments are made to:**

- Gold
- Crude oil
- Aircraft

The guiding principle for the inclusion or exclusion of transaction by Customs is whether physical movements across borders occur, whereas, the key principle for inclusion in the balance of payments goods account is whether a transaction results in a change of ownership.

- **Other BOP adjustments include** coverage for transactions that would not pass directly through Customs or where Customs waives the right to inspect each transaction individually. For example, postal trade, sales and purchases of electricity and transactions involving South African Airways (SAA) abroad.

## 8. Key reference materials and guides

International Monetary Fund (2009). Balance of Payments and International Investment Position Manual (6e). Washington DC: IMF. (Available: <https://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf> )

International Monetary Fund (2014). Government Finance Statistics (GFS) Manual (2014). (Available: [www.imf.org/external/pubs/ft/gfs/manual/gfs.htm](http://www.imf.org/external/pubs/ft/gfs/manual/gfs.htm))

South African Revenue Service (2016). Customs and Excise (website). (Available: <http://www.sars.gov.za/ClientSegments/Customs-Excise/Pages/default.aspx> )

United Nations Statistics Division (2011). International Merchandise Trade Statistics: Concepts and Definitions 2010. New York: United Nations. (Available: <http://unstats.un.org/unsd/statcom/doc12/BG-IMTS2010-CM.pdf> )

United Nations Statistics Division (2012). International Merchandise Trade Statistics: Compilers Manual, Revision 1. New York: United Nations. (Available: <http://unstats.un.org/unsd/statcom/doc12/BG-IMTS2010-CM.pdf> )

United Nations Statistics Division (2008). System of National Accounts of 2008. (Available: [unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf](http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf) )

World Trade Organisation (2016). HS Nomenclature 2012 Edition (website). (Available: [http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs\\_nomenclature\\_2012/hs\\_nomenclature\\_table\\_2012.aspx](http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs_nomenclature_2012/hs_nomenclature_table_2012.aspx) )