

Guyana System of National Accounts



**Bureau of Statistics
March 2010**

Guyana

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Foreword

The global demand for economic and financial statistics that are accurate, comprehensive, and comparable across countries is increasingly shaping the deliverables of national statistical systems. The compilation of national accounts is a cornerstone of such systems, producing outputs that inform evidence-based policy decision making at the individual, corporate, sector, national, as well as regional and international levels. In Guyana, our Government has worked, and will continue to work assiduously to strengthen the Bureau of Statistics (BoS) and other statistics-producing units within Government to promote the development of a national statistical system that embraces international best practices in data collection, analysis and dissemination.

This publication reports on the outcomes of a three-year project (2007-2009) on benchmarking and rebasing Guyana's national accounts (from base year 1988 to base year 2006), which included the incorporation of new data sources, and the adoption of new international methodological and industrial classification standards. These outcomes—and the publication of this report—underscore the Government's strong commitment to producing and disseminating high-quality data. They also attest to the Bureau's important role as a catalyst for promoting the culture of statistics in Guyana.

This is Guyana's first comprehensive national accounts report since the compilation of national accounts statistics began in 1960. I take this opportunity to congratulate the Chief Statistician and his competent and dedicated staff on this important milestone. I would like to thank the Caribbean Regional Technical Assistance Center (CARTAC) for the extensive technical support provided in this exercise.

The early phase of this project, the development of a supply and use table for benchmarking the 2006 Gross Domestic Product (GDP) estimates, also benefited from technical support provided by the United States Census Bureau, with funding from the InterAmerican Development Bank. The role of these partners in our statistical development is gratefully acknowledged.

I am pleased to commend this report to national and international users of Guyana's national accounts statistics. I am confident that the information on sources and methods used in compiling the national accounts will inform users of the methodological soundness, international comparability, accuracy and reliability of Guyana's GDP.

*The Honourable Dr. Ashni K. Singh, M.P.
Minister of Finance
Republic of Guyana*

Preface from the Chief Statistician

Guyana: System of National Accounts is the first comprehensive national accounts statistics publication to be released by the Bureau of Statistics (BoS). This publication marks the culmination of a project initiated by the BoS in 2007, to benchmark and rebase to 2006, Guyana's annual national accounts series.

This is the third rebasing exercise in the history of Guyana's national accounts (the previous base years for the GDP constant price series were 1977 and 1988), and perhaps the most challenging in many respects. Guyana's previous base year was 1988, over twenty years ago. Since then, the profile of Guyana's economy has evolved considerably. There have been changes in the patterns of relative prices, changes in economic structure and consumption patterns, introduction of new products; and not least, revisions in international standards and statistical methods used in compiling national accounts.

In planning for the national accounts rebasing exercise, the need for a comprehensive update of the data compilation system through the use of additional data sources, and an expansion of the scope of the current methodology was recognized as critical. Accordingly, benchmarking through the creation of a supply and use table for 2006 was seen as an important step in the rebasing exercise.

An important factor in the choice of the new base year was the fact that this was also the reference year for the Household Budget Survey (HBS), allowing our national accountants to leverage household-based data for commodity balancing in the production-based approach to GDP calculations. Further, from a regional perspective, the Standing Committee of Caribbean Statisticians has adopted a resolution urging all CARICOM Member States to revise their GDP series to a base year not earlier than year 2000, in order to effect closer harmonization and more meaningful comparison across CARICOM economies.

It is worth noting that any country's national accounts system is always considered a work in progress. We have indeed reached a significant milestone, but work will continue on the improvement of our methods, data sources, and ability to efficiently measure and report on our economy.

The production of this national accounts series would not have been possible without the participation of a myriad of persons and institutions. The BoS acknowledges the contribution and cooperation of the business community, public corporations, government agencies, and individuals, in the provision of the necessary data, to facilitate the completion of this report. Their continued cooperation in supplying data to the BoS in a timely manner will be critical to the maintenance of the new series. I also extend sincere thanks to the Director and staff of the Central Statistics Office (CSO), Trinidad and Tobago. The CSO facilitated the start of this process, with CARTAC funding, by hosting a three-person team from the Bureau in 2007 to be briefed by their National Accounts Division in the mechanisms required to undertake such an important exercise.

I would also take the opportunity to extend the deepest appreciation to the Caribbean Regional Technical Assistance Centre (CARTAC) which was with us at the beginning (the design stage) of the survey and assisted with compilation subsequent to the benchmark year, 2006. Additionally, it would be remiss of me not to mention the sterling inputs and contributions of the US Bureau of Census in the national economic survey and the process of benchmarking the accounts to the year 2006. These acknowledgements underscore the fact that this important and major exercise was truly a combination of local, regional and international effort, our partners being among the most renowned regional and international agencies in the field of statistics and statistics training.

Finally, I commend Ms. Sharon Kreuter and her team in the BoS National Accounts Division for their unwavering commitment in bringing this project to a successful end.

Lennox Benjamin
Chief Statistician

Selected Acronyms

1993 SNA	<i>System of National Accounts, 1993</i>
2008 SNA	<i>System of National Accounts, 2008</i>
BoS	Bureau of Statistics, Guyana
CARICOM	Caribbean Community
CARTAC	Caribbean Regional Technical Assistance Centre
CSME	Caribbean Single Market Economy
CPI	Consumer Price Index
FISIM	Financial Intermediation Services Indirectly Measured
GGMC	Guyana Geology and Mines Commission
GGB	Guyana Gold Board
GDP	Gross Domestic Product
GUYSUCO	Guyana Sugar Corporation
IADB	Inter-American Development Bank
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification of All Economic Activities
MoA	Ministry of Agriculture
MoE	Ministry of Education
MoF	Ministry of Finance
MoH	Ministry of Health
NES	National Economic Survey
NIS	National Insurance Scheme
PSIP	Public Sector Investment Program
SUT	Supply and Use Table
BoG	Bank of Guyana
T&HD	Transport and Harbours Department
VAT	Value Added Tax

Executive Summary

National accounts are an indispensable tool in analyzing, monitoring and evaluating the performance of the economy; they are compiled relative to a base year which should be updated periodically due to structural change. It is widely acknowledged that the structure of Guyana's economy has changed significantly since 1988, the last base year. Success in maintaining the national accounts series over the years has been achieved in spite of facing challenges common to statistics offices regionally and internationally, such as the changing face of businesses, survey response rates, and quality of data.

Consequently, in 2007 the Bureau of Statistics (BoS) embarked on a three step project for improving the accuracy and reliability of Guyana's GDP statistics by conducting a **comprehensive national economic survey, developing a supply and use table for benchmarking the GDP estimates to 2006**, and using the benchmark results for **rebasing the GDP constant price series to base year 2006**. Underlying these outcomes was the rebuilding of the national accounts system to allow for an integrated production account of gross output, intermediate consumption and value added; and the adoption of—to the best extent possible—the recommended international methodological and classification guidelines, including the 1993 SNA, and the International Standard Industrial Classification, Revision 4. Having completed this exercise, the BoS has introduced the rebased series as the basis for national accounts statistics with effect from January 2010, with the base year of 2006.

A rebasing exercise immediately results in two predictable outcomes: the size of nominal GDP expands significantly and the growth rate generally increases. As a result of the rebasing, Guyana's GDP (in current purchaser or market prices) estimates are now significantly higher than previous estimates, averaging 62.2 percent higher for the years 2006-2009¹. In 2009, under the 1988 series, Guyana's GDP in current market prices was estimated at G\$255,823 M. Re-calculating under the new system for 2009, the GDP at market prices is G\$413,114 M.² GDP estimates at current basic prices (formerly 'factor cost') average 77.5 percent higher for the years 2006-2009.

The new GDP series has also revealed higher historical real growth rates and changes in sectoral composition of GDP, owing to both the change in the structure of the economy and a better accounting of the activities in all sectors. The top 5 industry groupings, as measured by contribution to constant prices GDP in 2009 are now: *agriculture, fishing and forestry* (21.4 percent); *mining and quarrying* (12.6 percent); *wholesale and retail trade* (12.4 percent); *construction* (9.8 percent); and *public administration* (9.0 percent). In the 1988 series, for the year 2009 *agriculture, fishing and forestry* was also the leader at 28.1 percent, followed by *transport and communication* (14.2 percent), *government* (11.5 percent), *engineering and construction* (11 percent) and *distribution* (10.5 percent).

Better accounting of activity in key sectors in the rebased GDP results in higher weights in 2009 for several sectors. For example, government services now includes an estimate for consumption of fixed capital. Health and education—formerly classified under government—are now separated and expanded to include private sector activities. The distribution industry has an expanded coverage of commodity flows (using data on imports and domestic production), and an improved basis for estimating trade margins. At the same time, the mining and quarrying industry now reflects a larger share for gold, and a reduced share for bauxite. The new benchmark for manufacturing reflects the use of an expanded index of products; and in the "other services" industry certain categories, including tourism, hotels and restaurants, and professional services are better accounted for.

¹ Based on four-year annual average (2006-2009).

² Under the 2006 series, adopted from 2010, estimates of GDP at current purchaser (or market) prices for 2010 are G\$448,072 M. If the 1988 series is extrapolated to 2010, the estimated GDP at current market prices is G\$268,489M.

1. Introduction to the System of National Accounts

Overview

The System of National Accounts (SNA) is the internationally-agreed standard set of recommendations on how to compile measures of economic activity in accordance with strict conventions based on economic principles. The recommendations are expressed in terms of a set of concepts, definitions, classifications and accounting rules that comprise the standard for measuring such items as gross domestic product (GDP), the most frequently quoted indicator of economic performance. The standard governing national accounts is embodied in the international reference manual, the *System of National Accounts 1993 (1993 SNA)*, and in its recently updated version—the *System of National Accounts 2008 (2008 SNA)*.³ With the rebenchmarking and rebasing of the GDP series to 2006, Guyana has now formally adopted—on a best efforts basis—the recommendations of the *1993 SNA*.

National accounts are an indispensable tool in analyzing, monitoring and evaluating the performance of the economy. Its systematic framework allows for the organizing and presenting of data in a way that highlights economic activities and the interactions of different economic agents within the country while evidencing the various linkages between the domestic economy and the rest of the world. However, its use also extends to the micro level—providing important data inputs for market research and analysis.

GDP, **gross domestic product**, combines in a single figure, and with no double counting, all the output (or production) undertaken by all firms, nonprofit institutions, government bodies and households in a given country during a given period, regardless of the type of goods and services produced, provided that the production takes place within the country's economic territory. In most cases, GDP is compiled quarterly or annually; in Guyana, GDP estimates are compiled annually, and at the half year.

GDP can be derived by three broad approaches: the **income** approach, the **expenditure** approach, and the **production** approach. Each measure should, conceptually, deliver the same estimate of GDP. A description of each approach is as follows:

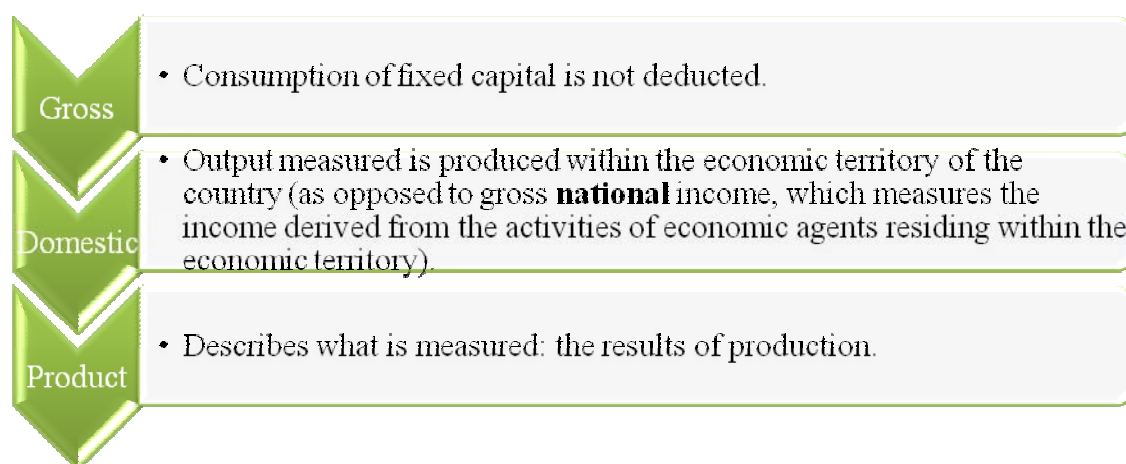
- GDP using the **income approach** is derived as the sum of compensation of employees, gross operating surplus, gross mixed income and taxes less subsidies on production and imports;
- GDP using the **expenditure approach** is derived as the sum of all final expenditures, changes in inventories and exports of goods and services less imports of goods and services;
- GDP using the **production approach** is derived as the sum of gross value added for each industry, at basic prices, plus taxes less subsidies on products. Basic values represent the amounts received by producers, including the value of any subsidies on products, but before any taxes on products. The difference between the sum over all industries of gross value added at basic prices, and GDP at market (or purchaser's) prices, is the value of taxes less subsidies on products.

³ These global manuals are published jointly by five major international economic organizations: the United Nations, the International Monetary Fund, the Organization for Economic Cooperation and Development (OECD), the World Bank and the European Commission. The adoption of the *2008 SNA* is a future goal for the majority of countries, with implementation by the countries with the most advanced statistics systems not expected before 2014.

In this publication, current and constant price (volume) estimates compiled using the production approach. The GDP current price estimates are based on a new compilation system that allows for an integrated **production account of gross output, intermediate consumption and value added**. The GDP constant price estimates are derived primarily by extrapolating annual volume measures using various indicators. These key terminologies are explained in the next section.

Concepts and Definitions

GDP measures the total gross values added produced by all institutional units resident in the economy. However it may include various taxes on products, depending on the precise ways in which outputs, inputs and imports are valued.



Using the production approach, GDP is the sum of the value added of all industries. This is the difference between gross output (essentially sales) of producers and the value of their intermediate inputs (that is purchases of commodities that are used up in the production of other commodities). The production approach uses a “T”-styled production account in recording the production of goods and services, as defined by the production boundary. Output generated from the production process is recorded as a resource on the left hand side of the account and the inputs used up in the production process (intermediate consumption) are recorded as a use on the right hand side of the account. **The value added is the balancing item for this account.**



Gross output comprises of goods and services that are produced within an establishment that become available for use outside that establishment. It includes inventory of work-in-progress and finished goods. The 1993 SNA recognizes three categories of output:

Market output which includes the following:

- The total value of goods and services sold at economically significant prices;
- The total value of goods and services bartered;
- The total value of goods and services used for payment in kind, including compensation in kind;
- The total value of goods and supplied by one establishment to another in the same market enterprise to be used as intermediate inputs; and
- The value of the changes in inventories of finished goods and work in progress.

Market output = sales plus changes in inventory of finished goods and work in progress.

Output for own final use:

- Production of capital goods for own gross capital formation;
- Household production of goods and services for own final consumption e.g. owner occupied dwellings; and
- Changes in inventories of finished goods and work in progress intended for own final use.

Output for own final use can be valued at prices for similar goods and services on the market or valued at the production cost plus mark up and normal profit.

Other non-market output:

This consists of goods and services produced by private non-profit institutions serving households (NPISH) and government. These goods and services are usually supplied free of costs or at economically insignificant prices.

Other non-market output = sum of production costs (intermediate consumption + compensation of employees + consumption of fixed capital + other taxes on production).

Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production. It excludes fixed assets whose consumption is recorded as consumption of fixed capital. The goods or services may be either transformed or used up by the production process. Some inputs re-emerge after having been transformed and incorporated into the outputs; for example rice paddy may be transformed into rice which in turn may be transformed into rice cereal. Other inputs are completely consumed or used up; for example, electricity and most services.

Intermediate consumption includes the value of all the goods or services used as inputs such as sales expenses, marketing, accounting, data processing, transportation, storage, electricity, maintenance, security, renting of building and equipment etc. Intermediate consumption also includes rentals paid on the use of fixed assets, whether equipment or buildings that are leased from other institutional units; and fees, commissions, royalties, etc. payable under licensing arrangements.

Valuation of output, intermediate consumption and value added

Output can be valued at either basic or producer's prices. The 1993 SNA recommends basic prices for the valuation of output; intermediate consumption should be valued at purchaser's price.

- **Basic price** is defined as the amount receivable by the producer from the purchase of a unit of good or service less any tax payable, plus any subsidy receivable as a consequence of its production or sale. Separately invoiced transport charges by the producer are excluded.
- **Producer's price** (net of all value added tax {VAT}) is the amount receivable by the producer from the purchase of a unit of good or service less any VAT invoiced to the purchaser. Separately invoiced transport charges by the producer are excluded.
- **Purchaser's price** is the amount paid by the purchaser, excluding any deductible VAT but includes any transport charges paid separately by the purchaser for delivery of the goods. These three concepts are related as follows:



Taxes on production and imports

There are two types of taxes on production and imports:

- ❖ Taxes on products are taxes on goods and services that become payable when the goods are produced, sold, imported or otherwise disposed of by their producers. These include VAT, taxes and duties on import, export taxes, and taxes on products/services not elsewhere classified.
- ❖ Other taxes on production are all taxes excluding taxes on product that establishments incur as a result of engaging in production (e.g. business and professional licenses).

Subsidies on products/production

Subsidies are current unrequited transfers from government to resident producers and importers. These transfers or payments are based on the levels of production and/or the quantity and value of goods and services produced, imported or sold. Subsidies are seen as negative taxation as producers receive them rather than pay them. There are two main types of subsidies on production and imports:

- ❖ Subsidies on products – subsidies payable per unit of a good or service;

- ❖ Other subsidies on production - subsidies excluding subsidies on products that are paid to resident establishments as a result of engaging in production.

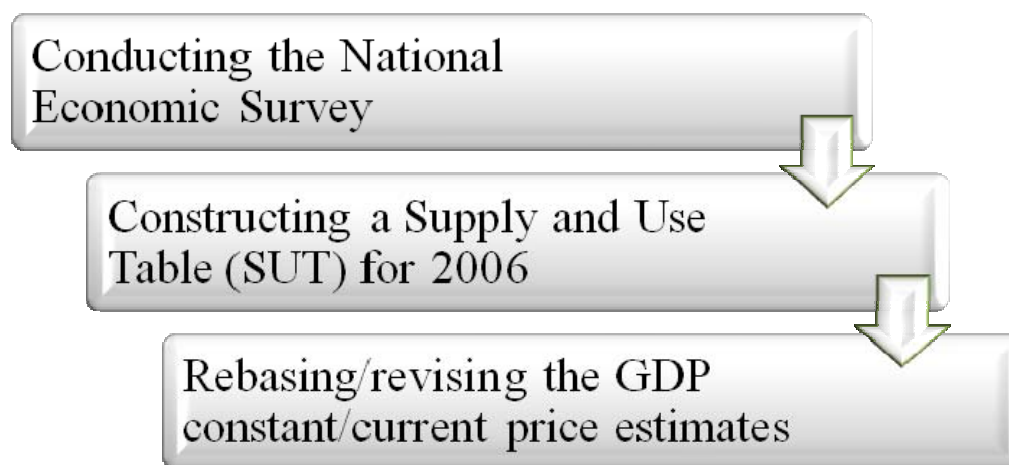
In Guyana's new GDP series, current price value added is derived from calculations made in valuing gross output at basic prices, and intermediate consumption at purchaser's prices. Taxes on products net of subsidies are then added (at the aggregate level) to derive GDP at purchaser's prices (or market prices). This adjustment is done only for the GDP current price estimates. In Guyana's case, GDP at basic prices moves to GDP at purchaser's prices since trade and transport margins are implicitly accounted for in intermediate consumption.

2. Guyana System of National Accounts

Background

National accounts are based on a variety of data sources that differ in terms of their accuracy, frequency, scope and level of detail of industry and measured variables. Benchmarking is the process by which high frequency data used in tracking the dynamics in the economy are reconciled with more accurate but less frequent data sources. It also provides an opportunity for using improved estimation techniques and utilizing new and better data sources, so as to strengthen and establish better statistical outputs.

Success in maintaining the national accounts series over the years has been achieved in spite of facing challenges common to statistics offices regionally and internationally, such as the changing face of businesses, survey response rates, and quality of data. In planning the national accounts rebasing exercise, the need for a comprehensive overhaul of the data compilation system through the use of additional data sources, and an expansion of the scope of the current methodology was recognized as critical. Accordingly, benchmarking through the development of a supply and use table for 2006 was deemed important for the rebasing exercise, and a three-step approach to the exercise was adopted.



National Economic Survey

Typically, the starting point for rebasing a country's national accounts GDP entails either a complete economic census that covers both production and intermediate consumption, or the more globally utilized National Economic Survey. The BoS therefore embarked in late 2007 on preparations for conducting the first wide-ranging National Economic Survey of Business Establishments (NES) in twenty years, which was executed in 2008. The absence of an updated business register (complete list of businesses) at the time of the survey presented the BoS with an underlying challenge in planning the execution of the NES, as such a register provides the source from which a sample would normally be drawn. Since no comprehensive register existed in Guyana, the BoS used an innovative technique, the dual frame probability sample, to measure and profile the economy.

The choice of base year is the next step; this entails finding a year which can be considered a relatively normal year for the economy, with no major disasters, entry or exit of huge businesses, major reforms in taxation, etc. The detailed data on consumption that was collected for the year 2006 from the HBS was a major factor in the decision to select 2006 as Guyana's new base year. Additionally, the flood in 2005 and the unusual movements in world commodity prices as well as the transition to VAT in 2007 precluded those years, while earlier years would have posed challenges with data availability.

In the first stage of the survey a certainty frame of businesses was compiled, which was created from previous data collections and traditional respondents, the Guyana Telephone Directory, trade and related organizations, Chambers of Commerce and administrative records that could be sourced. This list of certainty businesses, some of which were enterprises with multiple establishments, was qualitatively estimated to cover about 85 percent of the economy. All businesses on this list were enumerated (sampled with "certainty").

In the second stage, the survey employed a second frame based on enumeration districts (EDs) used in the Guyana 2002 Housing and Population Census. The area survey population was all economic establishments that operated at any time during the reference year 2006 and that are located in Regions 2-5, the coastal sections of Regions 6 and 10, the Bartica area of Region 7, the Lethem area of Region 9, and the Mabaruma area of Region 1. These EDs were randomly selected after being weighted by levels of business activity.

The survey instrument itself was a self-administered questionnaire developed by the BOS, with technical advice from the US Census Bureau and CARTAC. A general questionnaire was developed for use in the area sample ("short form"), which was used as the basis for producing a more detailed general questionnaire and thirteen other industry-specific detailed questionnaires ("long forms") for the certainty phase.

Coverage of larger industries was further supplemented with administrative records data, and other data sources (for example, the 2006 HBS provides data on household expenditure on recreation and personal services).

Supply and Use Table

The results of the NES were used to construct a supply and use table (SUT), which resulted in the benchmarking of the GDP of Guyana for 2006. The results of the benchmarking emphasized the need for ongoing work in a few key sectors, including construction. Additionally, it provided the basis for advancing work on the rebasing exercise, since Guyana now had to use improved techniques to continue estimating GDP beyond the base year of 2006.

Rebasing and Revising the GDP Series

The presentation of the new GDP series with base year 2006 is a milestone in a process that began with the NES, conducted in 2008 as a systematic and rigorous attempt to measure economic activities for the purpose of re-benchmarking and rebasing the GDP.

Box 1: Why Rebase the GDP Series?

A change in GDP results from the contribution of two changes, one being the change in the volume of goods and services produced, and the other in the price at which they are sold. GDP at current prices reflects both these changes, as production of the period is measured at the prices of that period. GDP at constant prices on the other hand reflects only the changes in the volume of production. This indicator measures production of the period at the prices of a base year.

The assumption that the relative prices of the components of value added do not change over time is inherent in the construction of constant price aggregates. However in a dynamic economy, relative prices constantly change as a result of shifts in the production structure and consumption patterns, uneven technological developments in different industries, variations in productivity as well as the appearance of new products and the disappearance of old ones. Thus, as the pattern of relative prices in an economy changes over time, those recorded for the GDP base period become progressively less relevant for calculating volume measures of output from one period to the next; it may then be necessary to update the base period—a process that is commonly referred to as “rebasing” in national accounting. The rebasing exercise not only revalues GDP at prices prevailing in the new base year, but also serves to reconcile and revise the production and expenditure-based estimates of GDP at current prices; and provides the occasion for methodological and conceptual reviews and improvements, as well as for the incorporation of new data sources.

Rebasing enables the national accounts to capture the real picture of the economy by taking account of factors, such as **relative price movements**, and **structural changes in production and consumption patterns**, which over time may contribute to an under- or over-estimation of GDP. Additionally, **the introduction of new products due to technological innovations and developments** (e.g., cell phones and internet usage); **product wise changes in the variety of products and services** (e.g., reintroduction of private education services); and **changes in international statistical methodologies and classifications** provide a compelling case for rebasing Guyana’s national accounts.

The key features of the rebased series are as follows.

A change in sectoral composition reflects better accounting of activity in key sectors. The rebased GDP includes higher weights for several sectors. For example, the government services sector now includes an estimate for consumption of fixed capital. Health and education services—formerly classified under government—are now separated and expanded to include private sector activities. The distribution industry, now referred to as wholesale and retail trade, has an expanded coverage of commodity flows (using data on imports and domestic production), and an improved basis for estimating trade margins. At the same time, the mining and quarrying industry now reflects a larger share for gold and diamonds, and a reduced share for bauxite. The new benchmark for manufacturing reflects the use of an expanded index of products; and the “other services” industry captures new categories, including hotels and restaurants and professional services.

New estimation techniques based on implementation of the 1993 SNA are now being used to compile GDP estimates. One significant methodology change concerns *financial intermediation services indirectly measured* (FISIM), where the use of financial intermediation by the economy is now accounted for. The current approach is to calculate FISIM as one total for the entire economy, but the BoS will endeavor to allocate FISIM on an industry basis in the future.

New data sources were established which improved the coverage of economic activities within the economy. As an example, the sectors of *information and communications* and *transportation* saw several

important coverage enhancements—for instance, the scope of telecommunications was expanded to include cell phone activities, and services such as internet service providers and TV broadcasting were added to communications. The operations of mini buses, taxis, lorries, domestic air services and coastal speedboats, as well as the services provided by air/sea ports and bridges, are better accounted for in an expanded transportation sector.

The economic profile now benefits from improved industrial classification and uses the most current international standard, ISIC Revision 4. As a result, for example, public health and education are classified into those industries and are no longer measured under public administration (formerly government). Similarly, a sub-industry measuring support to transport (operation of bridges and airports) is now measured in the transport industry.

The rebuilt national accounts system allows for an **integrated production account of gross output, intermediate consumption and value added**; and employs—to the best extent possible—the *1993 SNA* guidelines. In compiling the GDP volume estimates (constant prices), the single indicator method used is mainly the direct extrapolation of base year value added by a volume index of gross output; this represents a marked improvement on existing practices. The intermediate consumption and value-added ratios now better reflect the reality, as they are based on updated information derived from the NES, and other statistical enquiries.

GDP by Industrial Activity at Current Prices: Estimation Methods

The industry-specific details of the data sources and methodology used in estimating the GDP at current prices are described as follows.

Agriculture, Forestry and Fisheries

Sugar cane

For estimating value added, detailed financial data are obtained from the Guyana Sugar Corporation (GUYSUCO) via the NES. The NES data are used for calculating the production account components, including depreciation as a proxy for consumption of fixed capital (CFC).⁴ The BoS also collects from GUYSUCO data on sugar output, export and domestic sales (quantity and prices), and stocks that facilitate validation of sales estimates, and provide inputs for constructing volume measures of GDP.

GUYSUCO is a vertically integrated enterprise, with the output of its sugar cane plantations (sugar cane) used to manufacture sugar for sale. In line with the *1993 SNA*, the BoS separates the activities in accordance with the first level breakdown of ISIC. This is done by first calculating value added at the level of the enterprise (GUYSUCO), and then splitting the value added between agriculture and manufacturing, based on the field and factory employment costs. Further work is needed to identify the costs incurred at each stage of production (sugar cane to manufactured sugar) to ensure a more robust application of the *1993 SNA* guidelines.

⁴ Historically, value added was measured by the income method (compensation of employees and operating surplus), with no estimate for CFC.

Rice

Data on rice paddy production and prices are available from the Guyana Rice Development Board (GRDB). The SUT provides detailed information on costs of production, from which the current estimates of value-added were derived from gross output in the benchmark year of 2006.

Other Crops

Annual data on other crops production are available from the Ministry of Agriculture (MoA). The data are collected by the MoA through its regional field offices, but the data appear to be based only on reported information with no coverage adjustments for nonreporters. In estimating gross output, the BoS uses interpolation techniques at the individual crop level when the magnitudes deviated significantly from the trend level. The value of gross output is then calculated using wholesale/Parika farm gate price data published by the New Guyana Marketing Corporation. Based on market information, wholesale markets' price data (for markets other than Parika) were revised downwards to derive a farm gate price.

In deriving value added (gross output minus intermediate consumption), intermediate consumption is calculated using cost coefficients, classified by crop types.⁵ These coefficients differ according to crop type; and were based on industry knowledge and discussion with the MoA, and validated against those applied in other CARICOM countries.

Livestock

Data on poultry, beef, mutton, pork, egg and milk production are available from the Livestock Division of the MoA. The BoS also relies on information from the Guyana Poultry Producers Association as a secondary source for poultry data. The value of gross output is calculated using estimated farm gate prices, derived from the BoS consumer prices database for those products. In deriving value added, intermediate consumption is calculated using cost coefficients, based on industry knowledge.

Fishing

Volume data on prawns, shrimp and fish (the latter two further classified by method of catch—artisanal and industrial) are available from the Fisheries Division of the MoA. The BoS adjusted the 2006 and 2007 data where volatility could not be validated against observed trends in export volume and price movements, and was clearly due to a coverage problem. The value of gross output is calculated using landed catch prices, estimated by the BoS as a percentage of the average retail price of various species of fish and shrimp, as reported by the Fisheries Department. In deriving value added, intermediate consumption is calculated using cost coefficients derived from the National Economic Survey (NES)—for large industrial fishing companies; and from cost studies on artisanal fishing done by the Institute of Private Enterprise Development (IPED).

Forestry

Detailed volume data on forestry products are available from the Guyana Forestry Commission (GFC). Gross output is calculated using GFC data on the value of export and domestic sales (both quantity and

⁵ The classifications are: root crops, vegetables, spices and seasonings, citrus, non-citrus non-tree fruits, non-citrus tree fruits, legumes, horticulture, coconuts and other (coffee, cocoa).

price are available). In deriving value added, intermediate consumption is calculated using cost coefficients derived from the NES and the SUT.

Mining

Mining covers bauxite, gold, diamonds, and quarrying (sand and stone).

The gross output of **bauxite** is measured as the volume of output multiplied by export prices (all bauxite is exported). Value added is derived from data supplied by the industry.

For **gold**, the BoS collects monthly production data from the Guyana Gold Board (GGB), and the value of output is calculated by applying the London Gold Bullion Market Prices. In determining intermediation consumption, the BoS held discussions (in 2006) with the GGMC within the context of work on the SUT. The cost structure of dredging operations was determined for the base year and then applied for the benchmark estimates in 2006. Since updated cost data did not exist for years beyond 2006, the dredging costs from the base year were extrapolated by the CPI sub-index for fuel, and the increments in the amount of licensed dredges for the subsequent years.

For **diamonds**, gross output is based on GGMC data on output, with average export prices applied. Intermediate consumption is estimated as a percentage of the cost of gold extraction.

Sand and stone production data are collected from the GGMC. The basis for measuring the gross output of sand was changed as part of the GDP revision process, with GGMC data on estimated sand extraction now used instead of data on sand declarations, which is recorded when royalties are paid. The BoS has utilized the detailed knowledge of the industry that the GGMC possesses together with the partial data from the NES for stone to derive estimates of intermediate consumption and value-added, respectively.

Manufacturing

Sugar

GUYSUCO is a vertically integrated enterprise, with the output of its sugar cane plantations (sugar cane) used to manufacture sugar for sale. In line with the 1993 SNA, the BoS separates the activities in accordance with the first level of ISIC breakdown (estimation procedure outlined earlier in this report).

Rice

Data on rice production are available from the GRDB. Gross output is estimated by applying the annual average export price to the production data. Value added is derived by applying the intermediate consumption/gross output coefficient of the base year (sourced from the NES) to gross output.

Other Manufacturing

The basis for the current price estimates is the 2006 SUT which provides gross output, intermediate consumption and value added calculations for the following product categories: food, beverage, clothing, footwear, and other manufacturing (with breakdowns for paper and paper products; chemicals and chemical products; pharmaceuticals; rubber and plastic products; wood products; and other, including jewelry manufacturing, etc.). Using these benchmark estimates, current price estimates were estimated using volume and price estimates for subsequent years.

For industries with a high degree of concentration (such as beverages, stock feeds, pharmaceuticals and footwear), the volume estimates are robust, and data validation was possible through reference to other data sources, including the published annual reports of the main companies involved in these activities. However, while the monthly production survey has been ongoing for well over twenty years, there is scope for improvement and work is proceeding on monthly manufacturing production data collection in this industry, particularly for activities of small-scale manufacturing.

Electricity, Water and Sewerage and Waste Management

Value added estimates are based on NES (2006) data and the financial statements for subsequent years of Guyana Power and Light (GPL) and Guyana Water Incorporated (GWI). Private sector activities in waste management are based on NES data.

Construction

The estimation procedures for **public** and **private** construction are as follows.

The MoF's **Public Sector Investment Program (PSIP)** data provide the basis for estimating value added for public construction. At the first stage, the MoF identified the construction-related components of the PSIP. The construction components of additional projects such as the Berbice River Bridge, GUYSUCO's Skeldon Sugar Factory, and Guyana Power and Light's new Wartsila Power Plant are also included. Measured by the income approach, the value added for these projects aggregated local employment costs and the operating surplus of any domestic sub-contractors to the projects. Derivation of the aforementioned components required the obtaining of more than cursory details of financial arrangements for the construction-related components of the PSIP and other corporate construction projects.

For estimating private construction, the BoS employed the commodity flow approach.⁶ Using this approach, the total supply of building materials was estimated from the external trade data, as well as production of domestically produced building materials (forestry products, sand and stone). These supplies were then adjusted to exclude estimated amounts utilized under the PSIP, as well as amounts used as part of maintenance of residential buildings (which is part of intermediate consumption of real estate activities). The resulting estimate is intermediate consumption for private construction (residential and commercial), which was then used to derive gross output and value added on the basis of industry estimates on construction costs for residential buildings.

These estimates were derived from a number of sources, including house plan estimates (low and medium size) and were assessed against regional estimates, including those of other CARICOM countries. The intermediate results were also validated against related indicators, including the number and value of residential mortgages, sourced from the Guyana Deeds Registry.

⁶ A number of underlying indicators were also examined, including house lots allocated by the government, and Central Housing and Planning Authority (CHPA) applications for building permits. This could be refined with more timely availability of data on building permits *granted*, and determination of the lag between housing lot allocation and actual construction.

Wholesale and Retail Trade

The procedure introduced for measuring wholesale and retail trade (WRT), formerly referred to as *distribution*, is the commodity flow approach, using existing external trade data and the gross output of domestically-produced goods. Using the BoS external trade database, imports entering the distribution stream by economic classification were identified, and trade margins (which approximates to gross output for WRT⁷) and value added were then calculated using industry specific information according to product types. This information was based on the NES and on BoS/CARTAC mission discussions with different categories of wholesalers/retailers.

A similar exercise was undertaken for domestically produced goods, with estimates of domestically-produced goods entering the distribution stream based on the product balancing approach, using direct information where available (for example, rice, sugar and forestry products—data on local sales/consumption), or by estimates based on adjusting production by exports and/or use in intermediate consumption (e.g. for other crops). For household consumption products, data from the 2006 Household Expenditure Survey were also used either as part of the estimation procedures, or to validate the estimates (e.g., household fish and meat consumption).

Transport

Transportation value added comprises direct transport activities categorized by air (domestic passenger and cargo), land (lorries, minibuses and taxis), and sea (public ferries and private speed boats), supporting transport activities, and postal and courier services.⁸

Recording the activities of this industry had presented and will continue to present challenges, but its gradual transition to the formal economy and the results of the NES allowed improved 2006 estimates for these activities. Data on land transport, air transport (and auxiliary services) and public sea transport (and auxiliary services) are sourced from the records of the License Revenue Authority (LRO), Civil Aviation Authority (CAA), the Cheddi Jagan International Airport (CJIA) and the Transport and Harbours Department (T&HD).

Information and Communication

This activity, formerly grouped under transport and communications, is now separately distinguished and its scope expanded, covering telecommunications (including mobile phones⁹); internet service providers (ISPs); newspaper and other publishing activities; and TV programming and broadcast activities. The estimates for gross output, intermediate consumption and value added are based on the 2006 SUT, with additional information (for subsequent years) sourced from the NES.

⁷ Data on opening/closing inventories of wholesale and retail establishments are not available, but empirical evidence suggests no significant inventory holdings of consumer imports, and in the case of capital and intermediate goods, there is either fast turnover or goods are imported on order (for large capital equipment). Inventory information is enumerated in the NES, but in most cases was not completed.

⁸ According to ISIC, this activity should also include storage but there are no known firms in Guyana operating storage facilities as their primary activity.

⁹ Digicel entered the Guyana market in November 2006 by acquiring the Guyanese mobile operator U-Mobile through the direct acquisition of its ultimate parent holding company. This new activity is reflected in the significant real growth rate of the telecommunications sub-sector observed in 2007.

Financial and Insurance Activities

The compilation system for financial services was redesigned to take account of the requirements of the *SNA 1993* with regard to the calculation of financial intermediation services indirectly measured (FISIM), and to streamline the ISIC classification classes. With the more detailed data that has become available through the NES, the gross output for the following classes are now estimated directly: central banking, commercial banks, securities and commodity contracts brokerages (mainly non-bank cambios), trust companies and insurance.

Under the *SNA 1968*, predecessor to *SNA 1993*, the measurement of financial services output included both explicit service charges, and imputed bank service charges (IBSC), calculated as the difference between interest receivable and interest payable. The *SNA 1993* recommends that IBSC be replaced with FISIM, and that the output of financial services comprise both FISIM and commissions and fees directly measured.

In calculating FISIM, the BoS applied the reference rate approach, using data on consolidated financial institutions' balance sheet, as compiled by the BoG. However, in line with the *SNA 2008*, no adjustment was made for banking sector lending own funds. A simple approach was applied for Guyana as follows. The reference rate chosen was the BoG bank rate (as there is no interbank rate), the average interest rate on deposits was proxied by the small savings rate, and the average rate on loans was proxied by the prime lending rate. The formula referred to in Box 2 was then applied, using the respective average deposits and loan stock data (excluding nonresident component). Using the NES data, fees and commissions were added to FISIM to determine the overall output. Intermediate consumption was estimated using NES data, and value added derived. The results were assessed against the BoG data on (consolidated) commercial banks' operating costs and profits.

The value added for the BoG was calculated as the sum of employments costs, operating profits and depreciation as reported in the *BoG Annual Reports*. Insurance was estimated using NES data. An upward adjustment was taken to cover financial service activities not adequately captured in the NES; these mainly relate to the activities of nonbank cambios and money remittance firms. The new procedures for estimating financial services represent a significant departure from the current extrapolation-based estimates, and thus yield different results.

Unlike the *1968 SNA*, the *1993 SNA* recommends that FISIM be allocated not only to industries but also to households, government and the export of services as they too are users of the financial intermediation process. The *1993 SNA* proposes two approaches to the allocation of FISIM to final users and industries:

- ♦ To base the allocation of interest paid by borrowers and received by lenders on a sector to sector basis by applying the difference between the reference or pure rate and the actual rates. This reference rate represents the pure cost of borrowing and would eliminate the risk associated with making transactions. The "actual" interest rate contains both a fee for intermediation services as well as transaction risks. However, this approach requires a great deal of detailed information;
- ♦ or to allocate the FISIM to the different users proportionately to their financial assets and liabilities or other financial indicators.

BOX 2: METHOD FOR CALCULATING FISIM IN SNA 2008 (CONTINUED)

BOX 2: METHOD FOR CALCULATING FISIM IN SNA 2008

The method for calculating financial intermediation services indirectly measured, widely known as FISIM, has been refined in the light of experience in implementing the 1993 SNA recommendations. By convention the 2008 SNA recommends that FISIM applies only to loans and deposits and only when those loans and deposits are provided by, or deposited with, financial institutions. The 2008 SNA calculates the output of FISIM on loans and deposits only, using a reference rate applied within a specific formula.

The method recommended in the 2008 SNA (indicated earlier to be implemented by more advanced countries around 2014 era) for the calculation of FISIM implies several changes to the 1993 SNA formula. For financial intermediaries, **all loans and deposits are included, not just those made from intermediated funds.** The reference rate should contain no service element and reflect the risk and maturity structure of deposits and loans. The rate prevailing for inter-bank borrowing and lending may be a suitable choice as a reference rate. However, different reference rates may be needed for each currency in which loans and deposits are denominated, especially when a non-resident financial institution is involved. For banks within the same economy, there is often little if any service provided in association with banks lending to and borrowing from other banks.

The 2008 SNA recommends that the consumption of FISIM should be allocated between users (lenders as well as borrowers) treating the allocated amounts either as intermediate consumption by enterprises or as final consumption or exports.

The 1993 SNA calculated FISIM as the difference between property income receivable and interest payable. The property income receivable excluded that part which was receivable from investment of own funds. The 1993 SNA recognized that in practice it may be difficult to find any method of allocating FISIM among different users and, therefore, accepted that some countries may prefer to continue to use the convention whereby the whole of the services are allocated to intermediate consumption of a notional industry. This possibility has been removed in the 2008 SNA.

Source: System of National Accounts 2008

However, the 1993 SNA recognizes that these two approaches may not be feasible for all countries due to data constraints. The alternative would be (similar to the 1968 SNA) to create a notional industry with no output and the FISIM treated as intermediate consumption resulting in negative value added. This implies that industries use all of the services of the banks. This approach was used for Guyana for the reasons stated above, and the new tables have a line item called “adjustment for FISIM.”

Public Administration

Using data from the *Guyana Public Sector Estimates*, compensation of employees is calculated and disaggregated into the ISIC Revision 4 classifications, separately identifying the components: *education, health and social work, personal and recreational services*¹⁰, and *public administration*. The component

¹⁰ The data on *personal and recreational services* are included under *other activities* in the new data presentation format.

public administration is then added to the compensation of employees for the National Insurance Scheme (NIS, a compulsory social security scheme), municipalities and statutory agencies.

Currently central government and municipalities do not estimate consumption of fixed capital (CFC) and this will be one new area to address in the ongoing work for the national accounts. The basic data needed would be the stock of government fixed assets by major categories (buildings, transport equipment, office machinery etc.); or alternatively, an application of the perpetual inventory method to government's expenditure on capital formation (by similar breakdowns) would suffice. As an interim measure, the BoS examined the CFC/compensation of employees' ratios for two Caribbean countries and estimated an appropriate ratio for Guyana. Summing the CFC estimates plus the compensation of employees yields the gross value added, which is the GDP at current prices for public administration.

Education

Public education services' value added data are estimated using employment costs data sourced from the *Public Sector Estimates*, along with an adjustment for CFC (see discussion under public administration). Value added data for private education are based on the NES and administrative data, with coverage adjustments made by the BoS to account for schools either not covered or since established.

Health and Social Work

Public health and social services value added data are estimated using employment costs data sourced from the *Public Sector Estimates*, and from information from the Georgetown Public Hospital Incorporated, along with an adjustment for CFC (see discussion under public administration). Value added data for private health and social work are based on the NES and administrative data, with coverage adjustments made by the BoS to account for entities either not covered or since established.

Real Estate Activities

Housing services are part of GDP, in both the national income and product accounts. The rental value of tenant-occupied housing and the imputed rental value of owner-occupied housing are both part of housing services, reflecting the amount of money tenants spend for the service of shelter and the amount of money owner occupants would have spent had they been renting. Owner-occupied housing falls within the production boundary of the 1993 SNA, and are therefore included in ISIC Revision 4 (section L, real estate activities).

Value added for owner-occupied housing is calculated as the imputed output of housing services (space rent) less the expenses associated with owner-occupied housing, such as maintenance and repairs. Estimates of space rent for tenant- and owner-occupied housing are estimated as the number of tenant-occupied (or owner-occupied) units multiplied by the average rental value (or imputed rental value).

However, the procedures outlined in the previous two paragraphs were difficult to implement. As a benchmark, the SUT used the housing stock (with split between owner occupied and rented housing) derived from the 2006 HBS. With the extensive housing program, output estimates were made for years subsequent to 2006, but with negligible population growth, an assumption was made that the growth in owner-occupied housing would be offset to some extent by a reduction in rental housing, squatting, and in the size of extended households. An improved basis for the estimates may be possible after the 2010 Census is conducted and provides an updated number of households.

With these caveats, gross output is based on the housing stock estimates multiplied by the average yearly rental value. 2006 rental values are estimated from the HBS, and these values were adjusted by the CPI housing sub-index for years subsequent to 2006. Intermediate consumption is estimated as the equivalent of one month's rent (this estimate is currently used in some CARICOM countries).

Other Activities

Other activities cover hotels and restaurants; professional services; arts, entertainment and recreational services; and a number of other services, including beauty salons, security services and funeral homes. Estimates are derived predominantly from the HBS and NES data. However, this sector remains continuous work in progress, as constraints in our knowledge in the locations of many small and medium size businesses in this category precluded full coverage of some activities. Again, the execution of the Census, where every building will be listed and every economic activity found will be recorded, will greatly enhance data availability and the GDP estimates.

GDP by Industrial Activity at Constant Prices: Estimation Methods

Taking the production accounts data (compiled at current prices) as the appropriate starting point for the volume estimates, the additional source data needed are either price or volume indicators. For most of Guyana's commodity-producing sectors, quantity and output price data are available, though of varying degrees of comprehensiveness. The CPI (1994=100) covers the majority of household goods and services, and sub-indices for specific goods or services are applied for the volume estimates where appropriate. For electricity, water, transport, communication and information, a range of physical quantity indicators are available. Guyana does not compile a producer price index (PPI).

The main recommendation of the 1993 SNA for deriving volume measures is to apply the **double deflation method**, where value added is obtained as the difference between deflated output and deflated intermediate consumption; the implicit price change of value added derived in this way will by definition always be unaffected by the changes of output and input prices (see Box 3). While aggregate data for output and intermediate consumption are available for most economic activities, the absence of detailed intermediation consumption components, and the lack of data on input prices preclude the use of double deflation in Guyana's constant price value added estimates.

Accordingly, the single indicator method, applied as a direct calculation of the volume of value added from the current price value added either using price deflation or quantity extrapolation (extrapolation of base year value added by a volume index of gross output) is applied. Regarding the use of price indicators in single indicator methods, the IMF's Data Quality Assessment Framework (DQAF) for National Accounts recommends the procedure of using the price index to deflate output to obtain a volume index for extrapolating base-year value added. This procedure is followed in the few cases where, in the absence of a direct volume measure, the volume index is calculated indirectly by deflating gross output at current prices by the appropriate price index.

Box 3:What is Double Deflation?

Double deflation is the process of estimating value added at constant prices by deflating both gross output and intermediate consumption separately and then subtracting the latter from the former. This means estimating both gross output and intermediate consumption at constant prices, and taking the difference to yield GDP at constant prices. However, its application requires detailed data of good quality on price indicators for both gross output and intermediate inputs.

The alternative to double deflation is the use of a single indicator to extrapolate or deflate GDP at current prices. Although single indicators are generally unsuitable in industries where the relationship between value added, gross output and intermediate consumption vary significantly from one year to the other, they are less sensitive to errors in other industries and hence extensively used. This approach tends to be the most frequently used and is based on the assumption that the ratio of value added to gross output in current prices remains unchanged at constant prices. This assumption might hold in the short run but becomes progressively less relevant in the long run, hence periodic rebasing – in practice every five to ten years - of the constant price estimates is recommended.

The procedures used in determining the volume estimates are as follows.

Agriculture, Fishing and Forestry

Sugar cane

A quantity index based on sugar production is used to extrapolate the base year value added.

Rice Paddy

A quantity index based on rice paddy production is used to extrapolate the base year value added.

Other Crops, Livestock, and Fishing

A composite volume index (valuing the respective outputs by detailed product types using their respective 2006 prices) is used to extrapolate the base year value added for each sub-industry separately. Available output data was augmented with other indicators, including - for other crops - data on fertilizer imports (adjusted to exclude GUYSUCO imports as well an estimate for use in rice paddy farming); and for poultry output, imports of broilers.

Forestry

A composite volume index (valuing the current year outputs by detailed product types at their respective 2006 prices) is used to extrapolate the base year value added.

Mining

For **bauxite**, a composite volume index (valuing the current year outputs by detailed product types at their respective 2006 prices) is used to extrapolate the base year value added. For **gold, diamonds, and quarry products** (sand and stone), base year value added is also extrapolated by the respective volume indices.

Manufacturing

For both sugar and rice, quantity indices based on rice and sugar production are used to extrapolate the base year value added. For other manufacturing, base year value added is derived from the 2006 SUT which provides calculations for the following product categories: food, beverage, clothing, footwear, and other manufacturing (with breakdowns for paper and paper products; chemicals and chemical products; pharmaceuticals; rubber and plastic products; wood products; and other. Volume indices for these product categories are then used to extrapolate the base year value added.

Electricity, Water and Sewerage and Waste Management

Volume indices of electricity generation and water consumption are used to extrapolate base year value added of the respective sub-industries. Volume measures of waste collected will be accessed for waste management.

Construction

The absence of a comprehensive building materials price index impacted on efforts to implement sound deflation techniques in deriving volume estimates for construction. The BoS examined price trends for sand, stone, cement, lumber and other building materials. Price variability was noted for some products, often reflecting temporary supply shortages, but on an annual basis, these trends tended to smooth out. Given that there was no sound basis for weighting these price observations, and since the output of the construction industry is not a homogeneous product and the mix or composition of input materials would vary based on the size and type of construction, the BoS uses the overall CPI as a basis for deflating the current value of gross output to derive an implicit volume index for construction.

Wholesale and Retail Trade

For imported goods, the volume measures for WRT were derived by deflating the value of these imports by an appropriate price deflator, as follows:

- for consumer goods, the Guyana CPI was used;
- for intermediate goods (which comprises largely of fuel and lubricants), the value of imports was deflated by an energy price index (crude oil) compiled by the IMF (Average Petroleum Spot Price {APSP}), which is the average of U.K. Brent, Dubai, and West Texas Intermediate, equally weighted);¹¹
- for capital goods, the sub index of the Guyana CPI that covers building materials (CPI sub index 401-rent and maintenance) was used as a proxy.

¹¹ See <http://www.imf.org/external/np/res/commmod/index.asp>

For domestically produced goods, the volume measures were derived by deflating the value of these products by the Guyana CPI. A future improvement would be to use the implicit deflators derived from the output at constant prices, or the output of goods at constant prices directly.

Transport

Base year value added (at seven sub-sector levels) was extrapolated using related volume indicators (lorry, minibus and taxi registration, air passenger and air cargo volumes, ferry passengers and speed boat registration).

Information and Communication

Base year value added (at sub-sector levels) was extrapolated using related volume indicators derived either by price deflation of gross output (ISPs and TV programming), or by direct volume measures (estimated newspaper circulation, number of land access telephone lines/cell phone subscribers, inbound and outbound calls).

Financial and Insurance Services

To calculate financial services at constant prices, the average stock of loans and deposits is deflated by the CPI to derive a volume index of loans and deposits. FISIM at constant prices was also calculated using this method, with the further step of having the deflated values (of loans and deposits) applied to the base year bank rate, small savings rate and prime lending rate to derive FISIM on loans and deposits.

The main limitation of this estimate is that there is no separate volume measurement for insurance services. Data on insurance services are limited, with information on number and value of new, active and terminated policies (by different categories) unavailable.

Public Administration

A weighted volume index is created by applying each year's employment size (number of employees in the public service) to the detailed base year (2006) data on wages. The volume index is then used to extrapolate the 2006 current price value added. The volume index is then used to extrapolate the base year value added.

By applying the central government volume index to extrapolate the entire public administration, it is assumed that employment in NIS and municipalities exhibit identical growth trends. A more robust method is to construct volume indices for NIS and municipalities separately along the lines of that created for central government, and use same to extrapolate the base year value added. This would yield constant price series for each element (Central Government, NIS and municipalities) and is an area for further refinement.

Education

Education activities consist of both private and public entities. With the growth in private education during the period under review, the absence of reliable data on enrollment in private schools impacts the reliability of the volume estimates. This is expected to be addressed by the forthcoming Education Act which would make more information available. For public education, an input indicator based on employment of teachers (weighted by wage bands) was used to extrapolate the base year value added.

Health and Social Work

Health and social work consist of both private and public entities. For public entities (including GHPC), the weighted wage index is used to deflate the current price estimate as is the case with public administration and defense. For private entities, base year estimates of value added (derived from the NES) are extrapolated using a volume index based on the numbers of nurses and doctors. Room for future improvement includes efforts to access data on number of outpatients and hospital bed nights.

Real Estate Activities

A volume index of owner and tenant-occupied housing is used to extrapolate base year value added.

Other Activities

Other activities cover hotels and restaurants; professional services; arts, entertainment and recreational services; and a number of other services, including beauty salons, security services and funeral homes. Base year value added estimates are derived from the NES and administrative data.

However, volume estimates for this sector remains continuous work in progress, as collection of appropriate indicators for some activities is not yet established. For hotels and restaurants, the base year value added is extrapolated using a volume index of tourist arrivals. For other product groups, the gross turnover of firms is deflated by the CPI (or relevant CPI sub index, as applicable) to determine a volume growth (of gross output) that is assumed to be representative of that product group, and used to extrapolate the base year value added.

3. Results

Highlights

A rebasing exercise immediately results in two predictable outcomes: the size of nominal GDP expands significantly and the growth rate generally increases. As a result of the rebasing exercise, Guyana's GDP (in current purchaser or market prices) estimates extrapolated to years prior to 2010 for purposes of comparison are now significantly higher than official estimates, averaging 62.2 percent higher for the years 2006-2009¹². GDP at current basic prices (formerly 'factor cost') averages 77.5 percent higher for the years 2006-2009¹³.

GDP in G\$ billion - PREVIOUS VERSUS REVISED

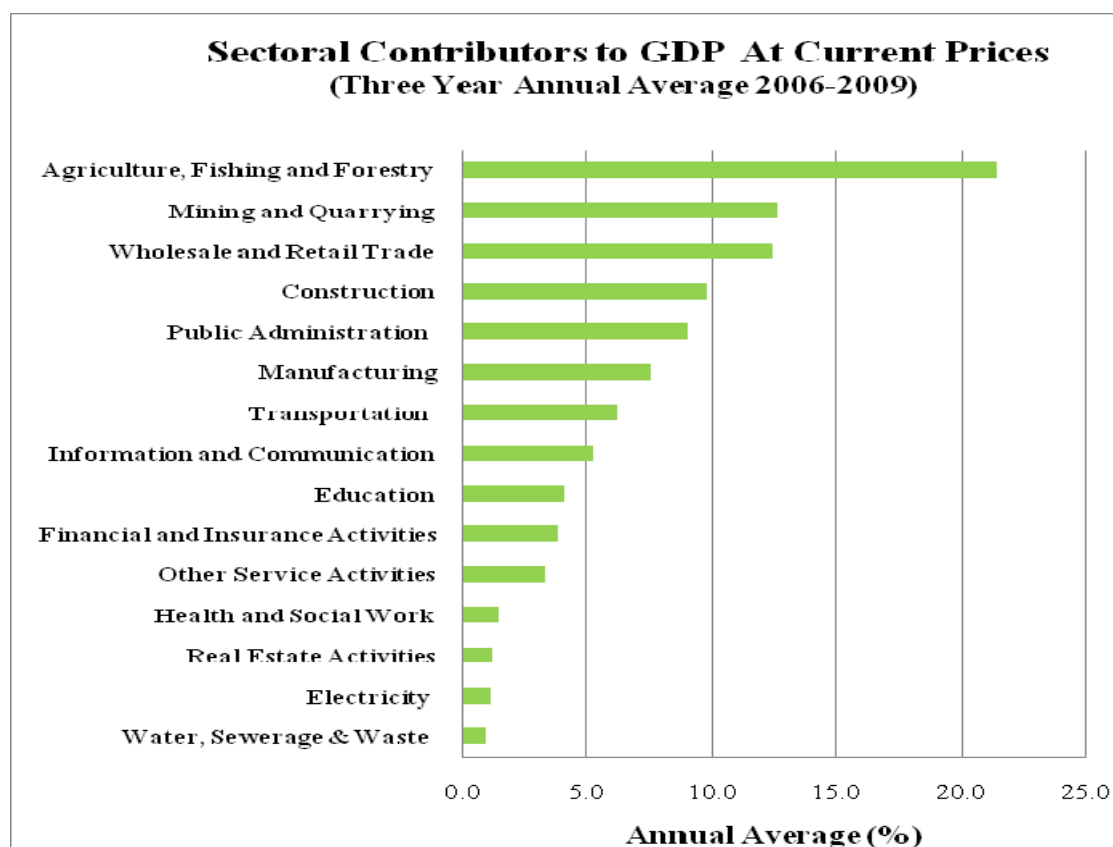
	2006	2007	2008	2009
Previous current factor cost GDP	154.0	171.2	190.8	202.2
Add: Indirect Taxes Net of Subsidies	29.1	46.3	45.3	53.6
= Previous current market prices GDP	183.1	217.5	236.1	255.8
Revised current basic prices GDP	262.9	305.8	349.5	359.6
Add: Taxes on Products Net of Subsidies	29.1	46.3	42.0	53.6
= Revised current purchaser's price GDP	292.0	352.1	391.5	413.1
Difference at factor cost / basic prices	108.9	134.6	158.7	157.4
Difference (percentage)	70.7	78.6	83.2	77.8
Difference at market / purchaser's price	108.9	134.6	155.4	157.4
Difference (percentage)	59.5	61.9	65.8	61.5

The top 5 industries in the 2006 series, as measured by contribution to GDP¹⁴ are: *agriculture, fishing and forestry* (21.4 percent); *mining and quarrying* (12.6 percent); *wholesale and retail trade* (12.4 percent); *construction* (9.8 percent); and *public administration* (9.0 percent). In the 1988 series, *agriculture, fishing and forestry* was also the leader at 28.1 percent, followed by *transport and communication* (14.2 percent), *government* (11.5 percent), *engineering and construction* (11 percent) and *distribution* (10.5 percent). The contribution of each industry under the new series (ISIC Rev. Classification) is illustrated overleaf.

¹² Based on four-year annual average (2006-2009). If the 1988 series is extrapolated to 2010, the estimated GDP at current market prices is G\$268,489 M.

¹³ Under the 2006 series, adopted from 2010, estimates of GDP at current purchaser (or market) prices for 2010 are G\$448,050 M.

¹⁴ Calculated as the average of each industry's annual (2006-2009) share in GDP at basic prices (excluding the FISIM adjustment).



Main Features of the New GDP Series

The main features of the new series are as follows:

- The GDP current and constant price series (2006=100) are calculated at basic and purchaser (or market) prices. Both series were introduced from January 2010 and are revised back to 2006.¹⁵
- The new series are based on the ISIC Revision 4 (see Appendix VII), with statistical units classified by primary activity, identified at least at the industrial level. Notable classification differences from the previous GDP series include: (1) agricultural and manufacturing activities related to sugar production are now separately identified in both the current and constant price series; (2) *transportation and communication* are now delinked, with the latter renamed *information and communication*, and including a wider coverage of activities, than in the previous series; (3) activities related to *education* and *health and social work* are now separately identified; (4) *government services* is redesignated *public administration* (including the National Insurance Scheme) with coverage also including municipalities and statutory bodies, but excluding the public provision of education and health and social, and recreational services.

¹⁵ Due to significant changes in the underlying compilation methods, the incorporation of new data sources, and the adoption of new methodology and classification standards, the revision of national accounts data for reference years prior to 2006 was not feasible.

- An estimate for financial intermediation services indirectly measured (FISIM) is introduced but not allocated across sectors.
- With the development of production accounts for most industries, estimates of gross output and intermediate consumption are available.
- Updated terminology has been adopted in the move from *SNA 1968* to *SNA 1993*: national accounts now calls a group of companies engaged in similar activities an “industry” instead of “sector”; indirect taxes are now referred to as taxes on products; the term “market prices” has been replaced by “at purchaser prices”; the term “factor cost” has been replaced by “basic prices”.

Appendix I Guyana: GDP at Current Factor Cost, 2006 - 2009 (G\$M – Previous Series)

INDUSTRY	2006	2007	2008	2009
AGRICULTURE, FORESTRY & FISHING	46,515	46747	47,406	49,162
Sugar-cane	14,591	11327	9,617	10402
Rice Paddy	7,399	7184	7,942	8497
Livestock	3,540	4,098	4,621	4,926
Other Crops	7,099	8,465	9,572	10,026
Fishing	10,214	12,016	12,365	11,830
Forestry	3,674	3,658	3,289	3,480
MINING & QUARRYING	15,009	19209	21,649	22,701
Bauxite	3,569	5411	5,047	3510
Other	11,440	13798	16,602	19191
MANUFACTURING	13,324	12943	12,675	13,285
Sugar	5,866	4467	3,793	3926
Rice	1,917	2096	2,317	2479
Other	5,541	6,380	6,565	6,880
ENGINEERING & CONSTRUCTION	9,790	11,579	13,191	13,925
SERVICES	69,363	80,712	95,806	103,185
Distribution	8,054	9,920	11,700	13,133
Transport & Communications	17,438	21,867	25,112	26,946
Rental of Dwellings	7,323	8,508	9,287	9,899
Financial Services	6,159	7,447	8,675	9,292
Government	27,132	29,072	36,611	39,178
Other	3,257	3,898	4,421	4,736
TOTAL	154,000	171,190	190,728	202,258
Indirect Taxes net of Subsidies	29,084	46,362	45,331	53,565
GDP AT MARKET PRICES	183,084	217,552	236,059	255,823

Appendix II Guyana: GDP at Current Basic Prices 2006–2009 (G\$M – current series)

ISIC	INDUSTRY	2006	2007	2008	2009
A	Agriculture, Fishing and Forestry	62,779	65,406	78,366	73,953
	Sugar	15,317	16,497	12,740	15,633
	Rice	6,811	8,072	21,700	13,711
	Other Crops	13,162	13,505	14,231	14,553
	Livestock	7,181	7,800	9,717	10,059
	Fishing	9,349	7,749	8,073	7,344
	Forestry	10,958	11,784	11,905	12,653
B	Mining and Quarrying	28,066	39,631	49,543	50,992
	Bauxite	5,172	7,932	9,905	6,871
	Gold	13,859	22,249	30,170	36,573
	Other	9,035	9,450	9,468	7,548
C	Manufacturing	20,169	22,975	28,856	27,706
	Sugar	4,072	4,888	3,387	4,155
	Rice	4,255	4,338	10,330	8,092
	Other Manufacturing	11,842	13,748	15,139	15,459
D&E	Electricity & Water	4,724	6,643	7,354	8,287
F	Construction	25,976	31,597	35,043	36,344
G	Wholesale and Retail Trade	32,003	39,298	42,591	50,517
H	Transportation	19,715	20,819	19,062	21,268
J	Information and Communication	14,054	17,461	18,661	19,049
K	Financial and Insurance Activities	9,475	11,726	14,887	14,763
O	Public Administration	25,334	27,829	32,181	32,929
P	Education	11,851	12,852	13,909	15,017
Q	Health and Social Services	3,802	4,374	4,693	5,537
L	Real Estate Activities	3,340	3,697	3,967	4,260
	Other Service Activities	8,933	10,767	11,618	12,026
	<i>less adjustment for FISIM</i>	<i>(7,340)</i>	<i>(9,286)</i>	<i>(11,257)</i>	<i>(13,101)</i>
	TOTAL	262,880	305,789	349,475	359,548
	Taxes on Products net of subsidies	29,084	46,362	42,031	53,565
	Gross Domestic Product at Purchaser Prices	291,964	352,151	391,505	413,114

Appendix III Guyana: GDP at Constant (1988) Prices, 2006 - 2009 (G\$M)

SECTOR	2006	2007	2008	2009
Sugar	802	824	699	723
Rice	189	183	203	221
Livestock	125	128	137	141
Other Agriculture	308	322	347	367
Fishing	156	161	158	141
Forestry	237	211	179	178
Mining & Quarrying	334	409	434	437
Manufacturing	364	367	360	360
Distribution	532	579	648	690
Transport & Communication	692	782	860	877
Engineering & Construction	597	631	685	695
Rent of Dwellings	114	118	123	125
Financial Services	340	364	408	420
Other Services	246	258	277	285
Government	722	729	736	736
TOTAL	5759	6068	6253	6397

Appendix IV Guyana: GDP at Constant (2006) Basic Prices 2006 – 2009 (G\$M)

ISIC	INDUSTRY	2006	2007	2008	2009
A	Agriculture, Fishing and Forestry	62,779	63,131	61,280	62,060
	Sugar	15,317	15,730	13,358	13,794
	Rice	6,811	6,613	7,311	7,974
	Other Crops	13,162	13,545	14,313	14,508
	Livestock	7,181	7,263	7,887	8,134
	Fishing	9,349	9,649	9,483	8,488
	Forestry	10,958	10,331	8,927	9,161
B	Mining and Quarrying	28,066	32,196	32,166	31,233
	Bauxite	5,172	7,724	7,422	5,008
	Gold	13,859	16,037	17,593	20,177
	Other	9,035	8,435	7,151	6,047
C	Manufacturing	20,169	20,784	19,863	20,714
	Sugar	4,072	4,182	3,551	3,667
	Rice	4,255	4,132	4,567	4,986
	Other Manufacturing	11,842	12,471	11,745	12,061
D&E	Electricity and Water	4,724	4,751	5,203	5,390
F	Construction	25,976	27,882	28,508	28,649
G	Wholesale and Retail Trade	32,003	34,780	36,334	39,886
H	Transportation and Storage	19,715	21,032	22,353	22,148
J	Information and Communication	14,054	18,242	19,932	20,668
K	Financial and Insurance Activities	9,475	9,352	10,243	11,340
O	Public Administration	25,334	25,792	25,619	25,619
P	Education	11,851	12,579	12,937	13,564
Q	Health and Social Services	3,802	4,266	4,849	5,782
L	Real Estate Activities	3,340	3,474	3,578	3,650
	Other Service Activities	8,933	10,553	12,052	13,169
	<i>less adjustment for FISIM</i>	<i>(7,340)</i>	<i>(7,479)</i>	<i>(8,022)</i>	<i>(7,454)</i>
	TOTAL	262,880	281,335	286,896	296,417

Appendix V Guyana: GDP at Constant (1988) Prices, 2006 – 2009 (Growth rates)

SECTOR	2006	2007	2008	2009
Sugar	5.5	2.7	-15.1	3.3
Rice	12.4	-2.9	10.5	9.2
Livestock	-3.0	2.0	7.4	2.5
Other Agriculture	7.0	4.6	7.7	5.8
Fishing	-3.2	3.2	-2.0	-10.5
Forestry	19.3	-11.1	-15.2	-0.6
Mining & Quarrying	-21.7	22.7	6.1	0.7
Manufacturing	5.0	1.0	-2.0	0.0
Distribution	10.0	9.0	11.8	6.6
Transport & Communication	10.0	13.0	9.9	2.0
Engineering & Construction	12.0	5.7	8.5	1.5
Rent of Dwellings	10.0	3.0	4.5	2.0
Financial Services	8.0	7.0	12.0	3.0
Other Services	8.0	5.0	7.0	3.0
Government	2.0	1.0	1.0	0.0
TOTAL	5.1	5.4	3.1	2.3

Appendix VI Guyana: GDP at Constant (2006) Basic Prices, 2007 – 2009 (Growth rates)

ISIC	INDUSTRY	2007	2008	2009
A	Agriculture, Fishing and Forestry	0.6	-2.9	1.3
	Sugar	2.7	-15.1	3.3
	Rice	-2.9	10.5	9.1
	Other Crops	2.9	5.7	1.4
	Livestock	1.1	8.6	3.1
	Fishing	3.2	-1.7	-10.5
	Forestry	-5.7	-13.6	2.6
B	Mining and Quarrying	14.7	-0.1	-2.9
	Bauxite	49.4	-3.9	-32.5
	Gold	15.7	9.7	14.7
	Other	-6.6	-15.2	-15.4
C	Manufacturing	3.1	-4.4	4.3
	Sugar	2.7	-15.1	3.3
	Rice	-2.9	10.5	9.2
	Other Manufacturing	5.3	-5.8	2.7
D&E	Electricity and Water	0.6	9.5	3.6
F	Construction	7.3	2.2	0.5
G	Wholesale and Retail Trade	8.7	4.5	9.8
H	Transportation and Storage	6.7	6.3	-0.9
J	Information and Communication	29.8	9.3	3.8
K	Financial and Insurance Activities	-1.3	9.5	10.7
O	Public Administration	1.8	-0.7	0.0
P	Education	6.1	2.8	4.8
Q	Health and Social Services	12.2	13.7	19.2
L	Real Estate Activities	4.0	3.0	2.0
	Other Service Activities	18.1	14.2	9.3
TOTAL		7.0	2.0	3.3

Appendix VII International Standard Industrial Classifications Rev. 4: Broad Structures

The individual categories of ISIC have been aggregated into the following 21 sections:

Sections	Divisions	Description
A	01–03	Agriculture, forestry and fishing
B	05–09	Mining and quarrying
C	10–33	Manufacturing
D	35	Electricity, gas, steam and air conditioning supply
E	36–39	Water supply; sewerage, waste management and remediation activities
F	41–43	Construction
G	45–47	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	49–53	Transportation and storage
I	55–56	Accommodation and food service activities
J	58–63	Information and communication
K	64–66	Financial and insurance activities
L	68	Real estate activities
M	69–75	Professional, scientific and technical activities
N	77–82	Administrative and support service activities
O	84	Public administration and defense; compulsory social security
P	85	Education
Q	86–88	Human health and social work activities
R	90–93	Arts, entertainment and recreation
S	94–96	Other service activities
T	97–98	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
U	99	Activities of extraterritorial organizations and bodies

Source: *International Standard Industrial Classification for All Economic Activities, ISIC Revision 4 (United Nations, 2009)*

Of the 21 sections, Guyana's new GDP compilation system has adopted the classification structure for 14 sections (those in bold above). The remaining 7 sections (I, M, N, R, S, T and U) are assumed captured under *Other Activities*.

Appendix VIII Selected Indicators on Mining & Quarrying

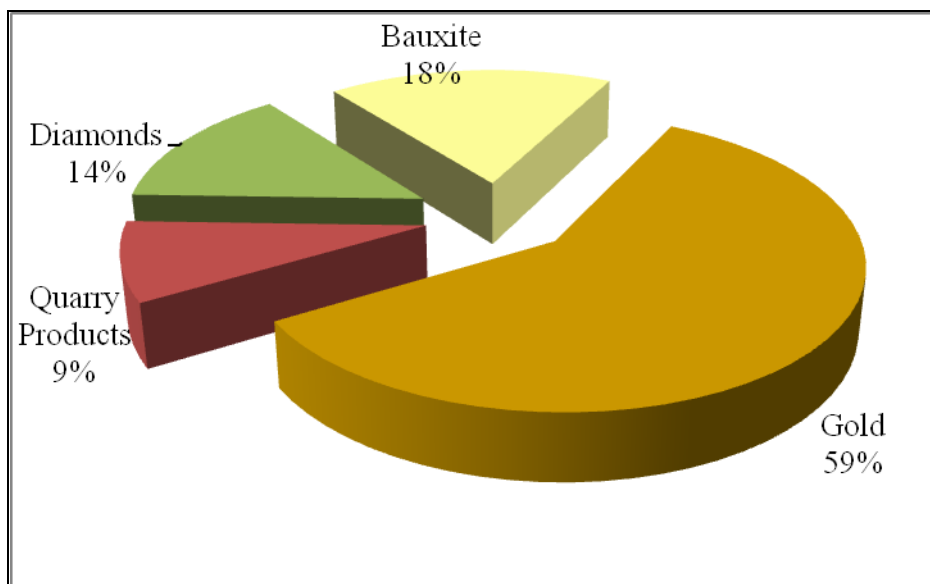
Production Account Components for Mining and Quarrying (G\$000)

Current Prices

Mining & Quarrying

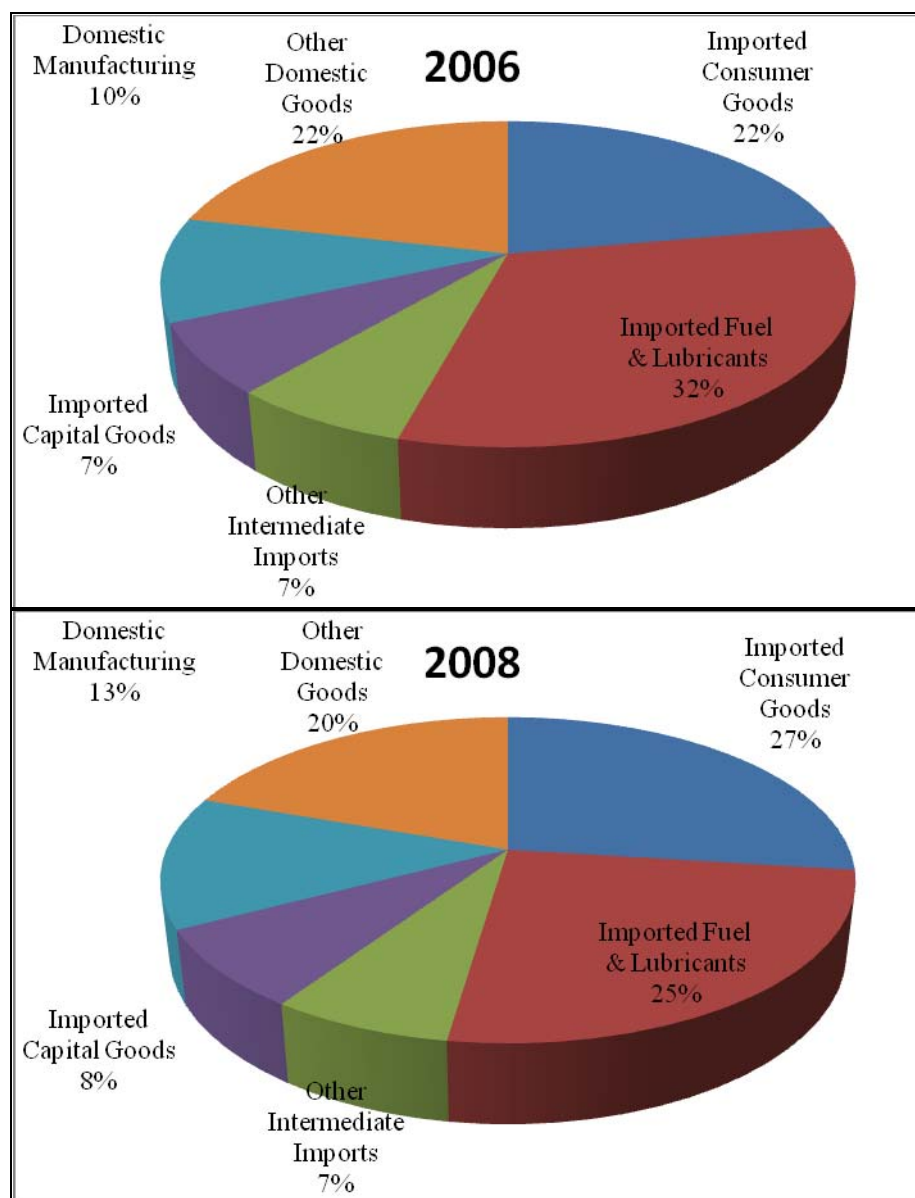
Gross Output (GO)	2006	2007	2008	2009 (E)
Bauxite	13,696,208	21,006,093	26,231,702	18,199,741
Gold	25,027,287	33,511,285	46,007,762	55,772,475
Diamonds	8,661,918	7,103,527	5,510,777	3,511,473
Quarry Products (sand & stone)	3,042,988	4,794,221	6,667,973	6,280,482
Intermediate Consumption				
Bauxite	8,524,438	13,074,067	16,326,455	11,327,411
Gold	11,167,821	11,262,299	15,837,920	19,199,369
Diamonds	1,830,826	1,094,323	816,257	520,120
Quarry Products (sand & stone)	839,268	1,353,804	1,894,382	1,723,929
Value Added (VA)=GDP				
Bauxite	5,171,770	7,932,026	9,905,247	6,872,330
Gold	13,859,466	22,248,986	30,169,842	36,573,106
Diamonds	6,831,093	6,009,204	4,694,520	2,991,353
Quarry Products (sand & stone)	2,203,720	3,440,417	4,773,591	4,556,553
TOTAL	28,066,048	39,630,632	49,543,200	50,993,341

Mining and Quarrying: Product Contribution to Value Added (GDP) Average (2006-2009)



Appendix IX Selected Indicators on Wholesale & Retail Trade

Wholesale and Retail Trade Value Added by Product Categories 2006 and 2008 (Imported and Domestically-Produced)



Note: *domestic manufactured goods* exclude sugar and rice, which are included on *other domestic goods*. The other main components of other domestic goods include other crops, livestock, forestry products and other construction materials, as well as light manufacturing.

In 2006, imports accounted for 68.3 percent of the value added of wholesale and retail trade, with domestically-produced goods accounting for the remaining 31.7 percent. Similar trends were evident in 2008 with imports accounting for 67.3 percent, and domestically produced goods, 32.7 percent of value added.