GOVERNMENT OF BERMUDA
Department of Statistics

GROSS DOMESTIC PRODUCT REBASING
BASE YEAR - 2013
November 2019

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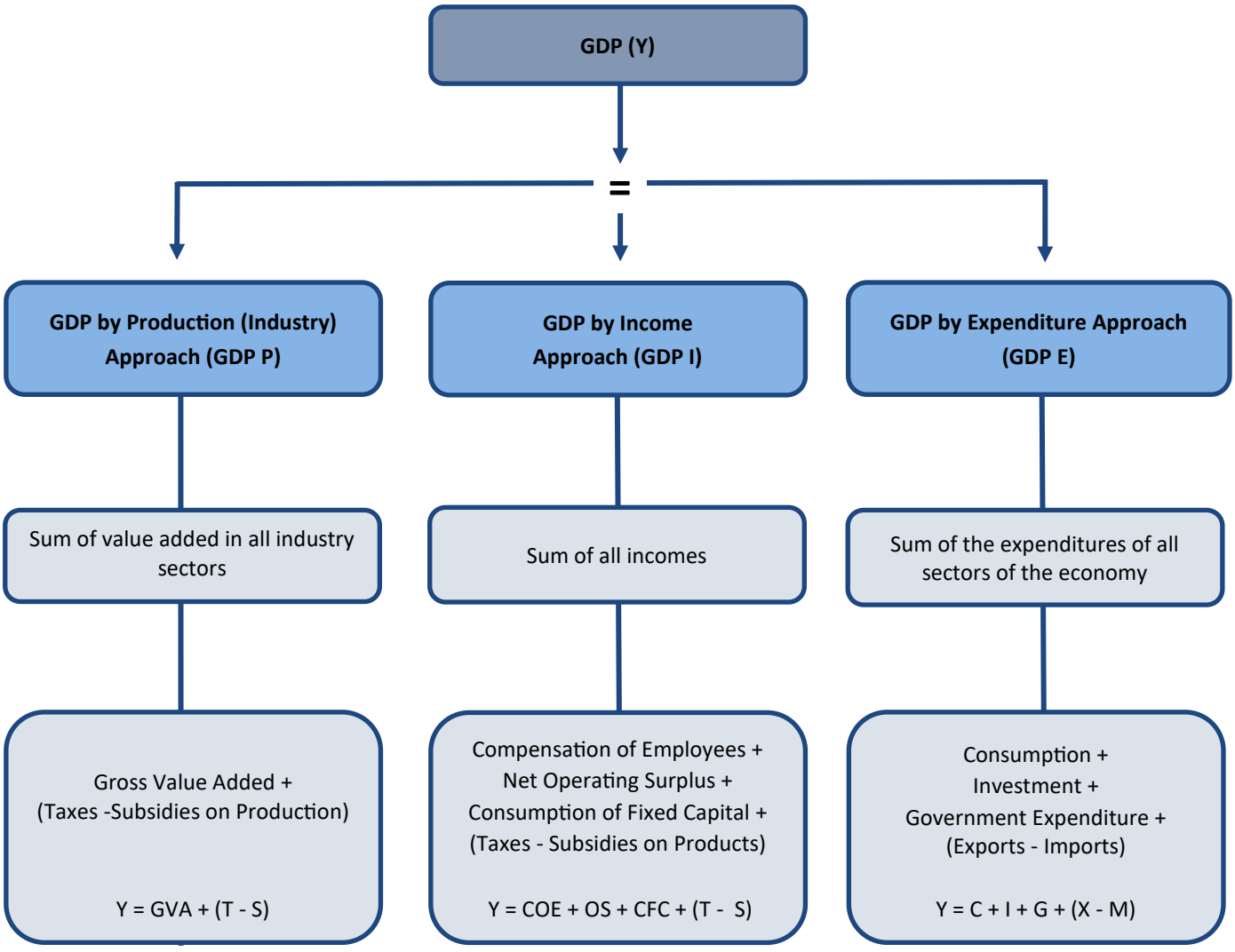
What is Gross Domestic Product?

Gross Domestic Product (GDP) is the value of all final goods and services produced within a country in a given period of time. GDP measured at current prices shows the value of these goods and services using their price at the time of production, while GDP at constant prices reflects the value of produced goods and services, but it uses constant consumer and producer price indices to remove the effects of rising price levels.

The GDP can be measured using three approaches; production (industry), income and expenditure. Each approach should result in the same number, with some possible difference caused by statistical and rounding differences (Figure 1).

Figure 1. Three Approaches to Measuring GDP



What is Rebasing and Why do we Rebase the GDP?

Rebasing the GDP is the process of replacing an old base year with a more recent base year to keep up with the evolution in prices. Constant price estimates are then recalculated in terms of the prices of the new base year and provides a reference point to which future values of the GDP are then compared. One of the improvements in Bermuda's national accounts statistics is to rebase the GDP from a base year of 2006 to 2013 in order to capture more current economic conditions. The change in the base year aligns with the United Nations Statistical Commission's recommendations to rebase the national accounts every five years. The rebasing exercise also presents an opportunity to incorporate new statistical methods outlined in the 2008 System of National Accounts (SNA) using the Supply and Use Tables (SUT) as the framework.

Bermuda's GDP series now reflects a more accurate picture of the size and structure of the economy and incorporates new activities that were previously not captured in the computational framework. The relevance of the GDP series has been enhanced and is now more internationally comparable with other jurisdictions.

What are the Benefits and Implications of Rebasing the GDP to 2013?

Rebasing the GDP allows Bermuda's policymakers to use a set of economic statistics that is more representative of the economic structure of Bermuda than those based on the 2006 base year. The 2013 base year series features 18 industry groupings versus the previous 15 industry groupings. In support of evidence-based decision making, the rebased GDP provides a better understanding of which industries are driving growth since emerging industries such as the Information and Communication industry are now explicitly featured.

Bermuda's base year of 2013 was selected primarily because of the availability of new data sources to improve the quality of the GDP such as household consumption data from the 2013 Household Expenditure Survey. Other more recent data sets such as the rebased 2015 Consumer Price Index and rebased 2015 Retail Sales Index were also used in updating the deflators for the rebasing exercise, to derive constant price estimates by industry. These more recent price indices account for transformations in consumption patterns, the introduction of new products and technological developments from the last rebasing exercise. The rebasing exercise then incorporates these changes into the calculation of the GDP estimates.

The impact of rebasing the GDP will be felt primarily in the development of macroeconomic indicators such as tax to GDP ratios, debt to GDP ratios, current account surplus to GDP ratios and the GDP per capita. These indicators may be used by government officials to inform policymaking. The historical GDP series was extrapolated backwards to 1996 to reflect the new benchmarks which will affect economic models that were based on the old data.

What are the Methodological and Conceptual Changes and Improvements of the Rebased GDP?

- Compilation of the 2013 benchmark estimates within a SUT framework which reconciles GDP via the production, income and expenditure approach.
- Expansion of coverage to include informal and own-account production where necessary.
- Compilation of Financial Intermediation Services Indirectly Measured (FISIM) using the recommended methodology from the 2008 SNA.
- Disaggregation of FISIM into the intermediate consumption of enterprises, final use and export allocating the intermediate consumption across industries.
- Expansion of the measure of taxes on products and production.
- Use of the most recent International Standard Industrial Classification (ISIC) Rev. 4.

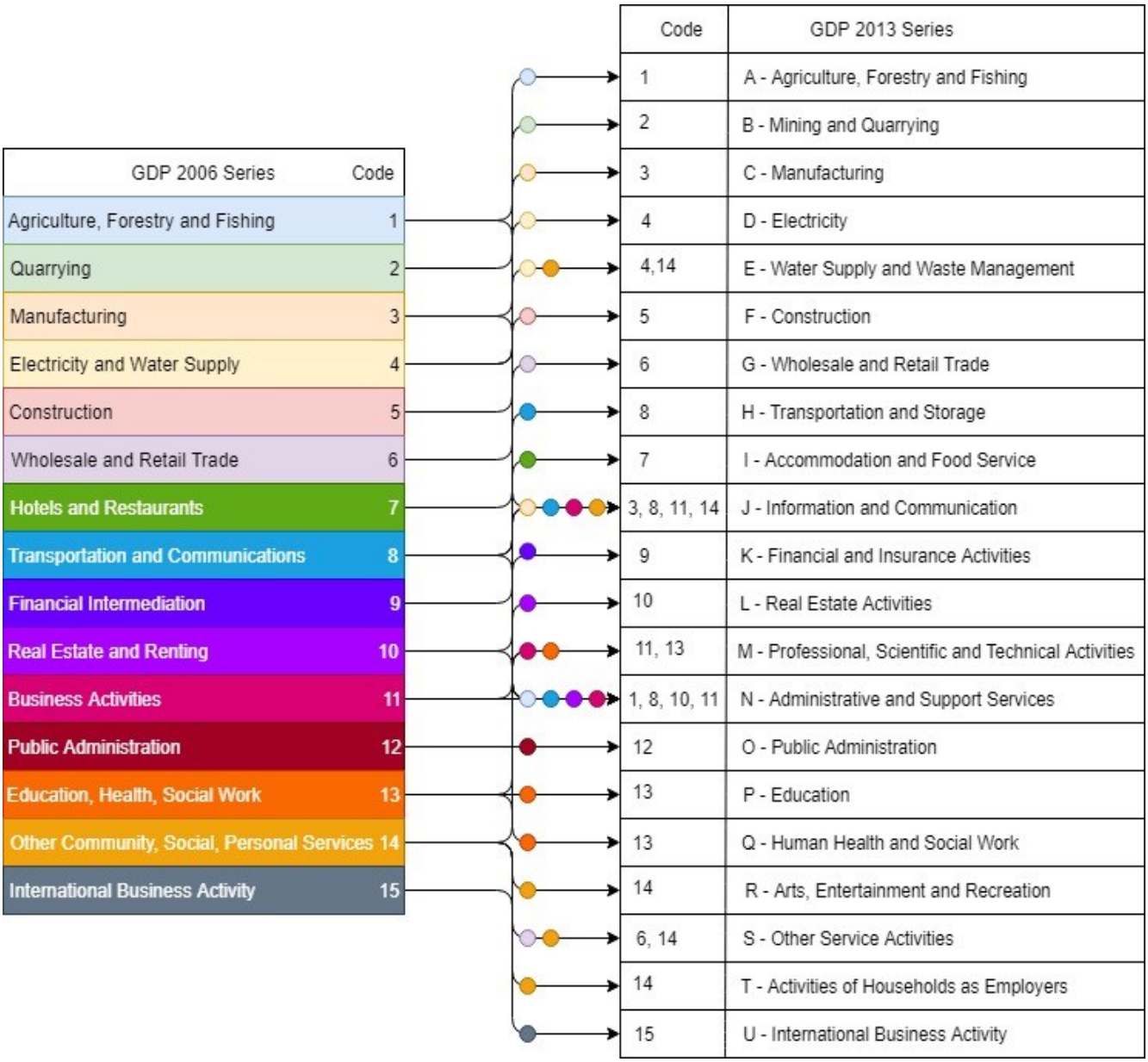
What is the SNA?

The SNA is a statistical framework that provides a comprehensive, consistent and flexible set of macroeconomic accounts for policymaking, analysis and research purposes. The SNA manual includes recommendations on accounting rules, concepts, definitions and classifications that would form the basis for compiling economic statistics indicators (including GDP) that are internationally comparable. Bermuda's GDP estimates prior to the 2018 GDP release were compiled based on the 2003 SNA. All subsequent publications will be compiled based on the 2008 SNA, the latest version of the SNA manual.

What are the Changes in the GDP Classification?

The GDP classification by industry is based on ISIC. The GDP 2006 series uses ISIC Rev. 3.1 while the classification of the 2013 series applies ISIC Rev. 4. The comparison of the GDP classification at the aggregate level can be seen in Figure 2.

Figure 2. Comparison of GDP by Industry Classification 2006 Versus 2013



What is the SUT?

The SUT forms the central framework for compiling a single estimate of GDP by integrating all the components of the production, income and expenditure approaches. It consists of two main tables namely the Supply table and the Use table.

The Supply table describes how goods and services are supplied to an economy (whether domestic production or imports). The Use table describes how these goods and services are used (intermediate consumption, household consumption, non-profit institutions serving households, government final consumption, gross capital formation and exports).

The SUT serves as an important analytical tool showing the interaction between producers and consumers. It also forms the basis for calculating input-output tables for economic analyses, impact analyses, industry and sectoral analyses, and provides the base structure for modelling.

The SUT framework has three identities that should be fulfilled (Figure 3):

A. **Identity 1:** OUTPUT = INPUT
The value of goods and services produced by domestic industries should be equal to the value of goods and services used in the production process.

Output = Intermediate consumption + Gross Value Added (GVA)

B. **Identity 2:** SUPPLY = USE
The value of goods and services provided by domestic industries and imports should be equal to the value of goods and services used in the production process and final consumption.

Output + Imports = Intermediate Consumption + Final Consumption + Gross Fixed Capital formation + Exports

C. **Identity 3**: For each industry, GVA using the production approach = GVA using the income approach

Figure 3. Framework of the SUT

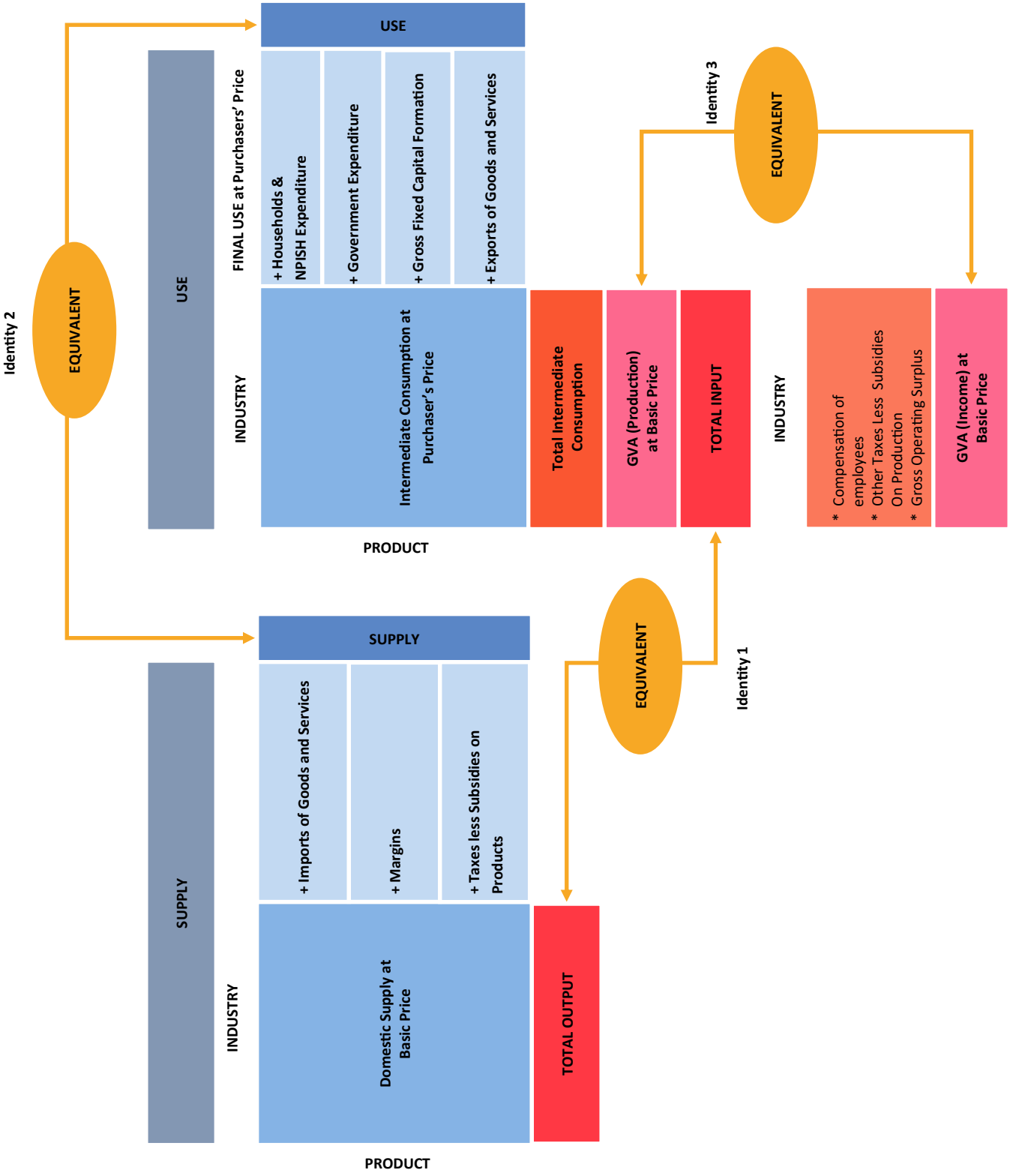
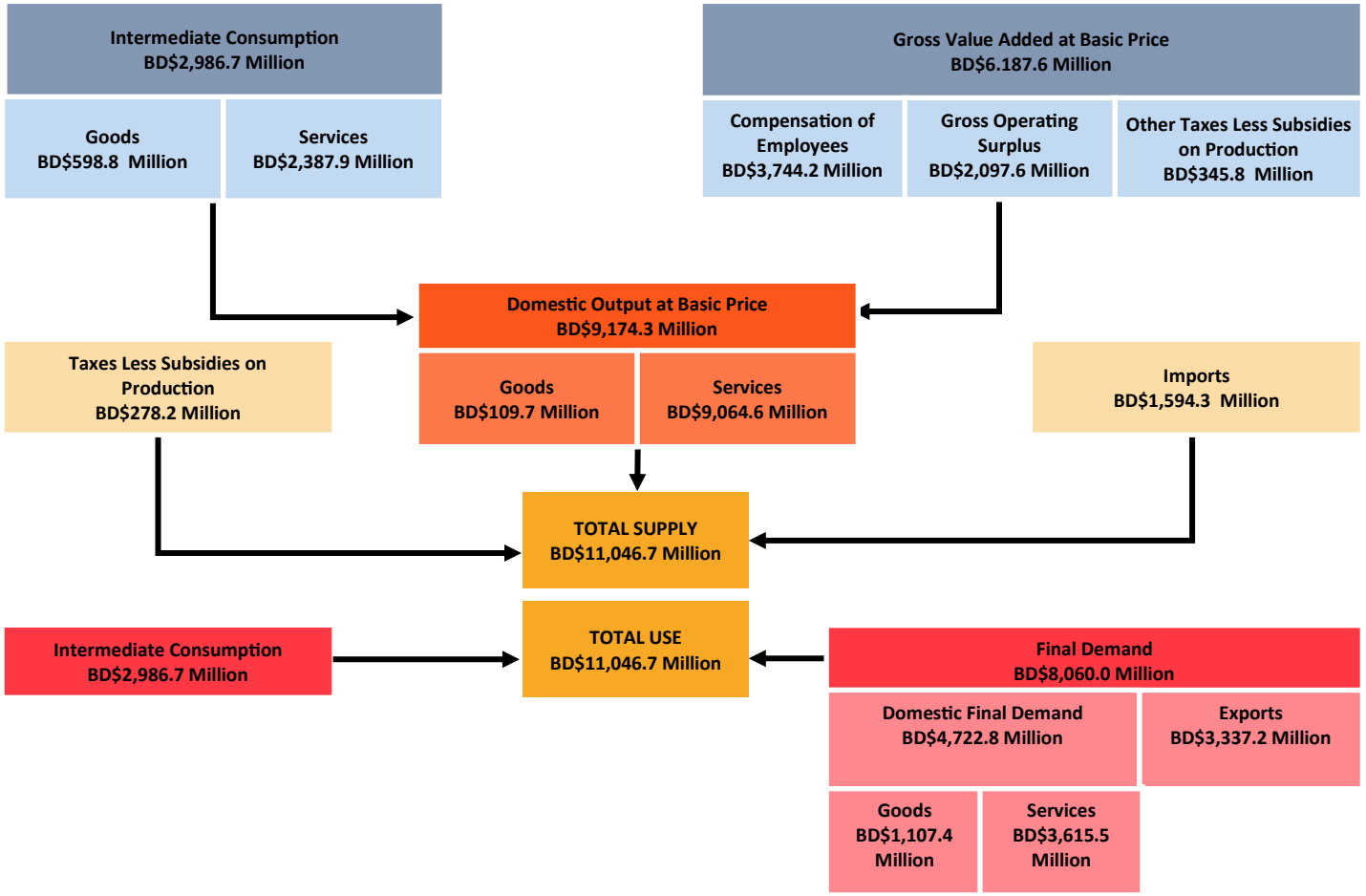


Figure 4. Summary Results of the 2013 Bermuda SUT

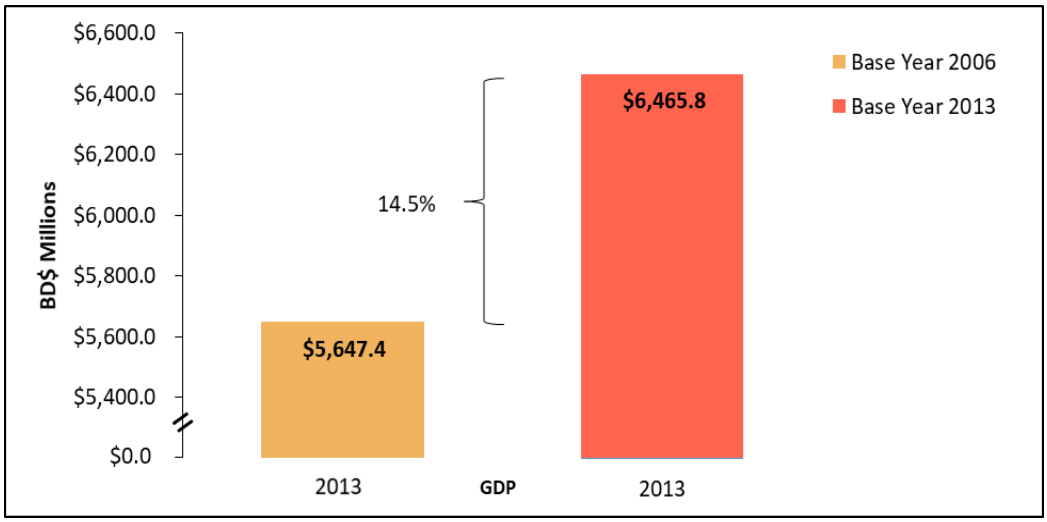


PRODUCTION APPROACH		INCOME APPROACH		EXPENDITURE APPROACH	
GROSS DOMESTIC PRODUCT				2013 at Current Purchasers' Prices (BD$ Millions)	
Total Output at Basic Prices	$9,174.3	Compensation of Employees	$3,744.2	Domestic Final Demand	$4,722.8
- Intermediate Consumption	$2,986.7	+ Other Taxes Less Subsidies on Production	$345.8	+ Exports on Goods and Service	$3,337.2
		+ Capital Consumption	$252.2	- Imports on Goods and Services	$1,594.3
		+ Net Operating Surplus	$1,845.4		
= Value Added at Basic Prices	$6,187.6	= Value Added at Basic Prices	$6,187.6		
+ Taxes Less Subsidies on Products	$278.2	+ Taxes Less Subsidies on Products	$278.2		
= Gross Domestic Product	$6,465.8	= Gross Domestic Product	$6,465.8	= Gross Domestic Product	$6,465.8

Comparing the Difference in 2013 Nominal GDP (2006 Series Versus the 2013 Rebased Series)

GDP at current prices in the year 2013 for the 2006 based series was BD$5,647.4 million, while rebased GDP based on the SUT 2013 reached BD$6,465.8 million, which is BD$818.4 million (14.5%) higher than $5,647.4 million (Figure 5).

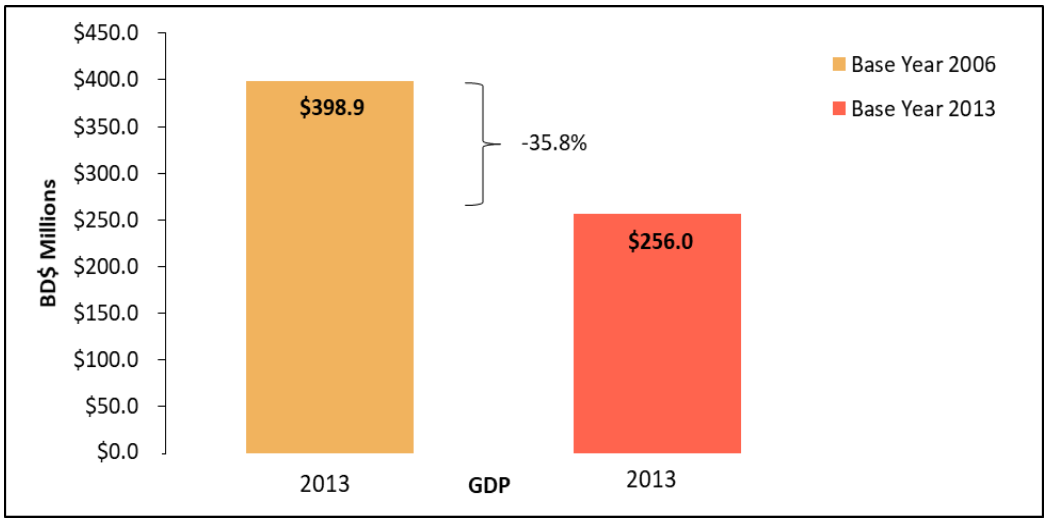
Figure 5. The Comparison between GDP in Current Purchasers' Prices 2006 and 2013 Base Year



The Effect of the 2008 SNA implementation on FISIM for Intermediate Consumption

Implementation of the 2008 SNA decreased the level of FISIM attributed to intermediate consumption for the 2013 base year by 35.8% compared with the base year 2006. A greater portion of total FISIM was attributed to exports whereas under the methodology in previous years the entire FISIM amount was deducted from gross value added, effectively lowering the GDP under the old series. FISIM in 2013 (base year 2006) is BD$398.9 million, while FISIM of base year 2013 reached BD$256.0 million, which is a difference of BD$142.9 million (Figure 6).

Figure 6. The Comparison of 2013 Intermediate Consumption Component of FISIM in Two Base Years (2006 and 2013)



Comparing the Shares of Final Expenditure and Income : 2006 Base Year Versus 2013 Base Year

Rebasing the GDP changes the expenditure and income shares as shown in Table I and Table 2.

Table 1. Comparison of 2006 and 2013 GDP in Base Year (2006 and 2013)

	Component of Expenditure	2006 Base Year		2013 Base Year	
		Million BD$	%	Million BD$	%
1	Household & Non-Profit Institutions Serving Households (NPISH) Consumption Expenditure	2,648.5	49.3	3,135.6	48.5
2	Government Consumption Expenditure	764.2	14.2	883.0	13.7
3	Gross Fixed Capital Formation	853.3	15.9	704.3	10.9
4	Exports of	2,837.1	52.9	3,337.2	51.6
	A. Goods	36.2	0.7	84.2	1.3
	B. Services	2,800.9	52.2	3,253.0	50.3
5	Less Imports of	1,734.9	32.3	1,594.3	24.7
	A. Goods	1,005.3	18.7	961.2	14.9
	B. Services	729.6	13.6	633.0	9.8
Gross Domestic Product at Purchasers' Prices		**5,368.1**	**100.0**	**6,465.8**	**100.0**

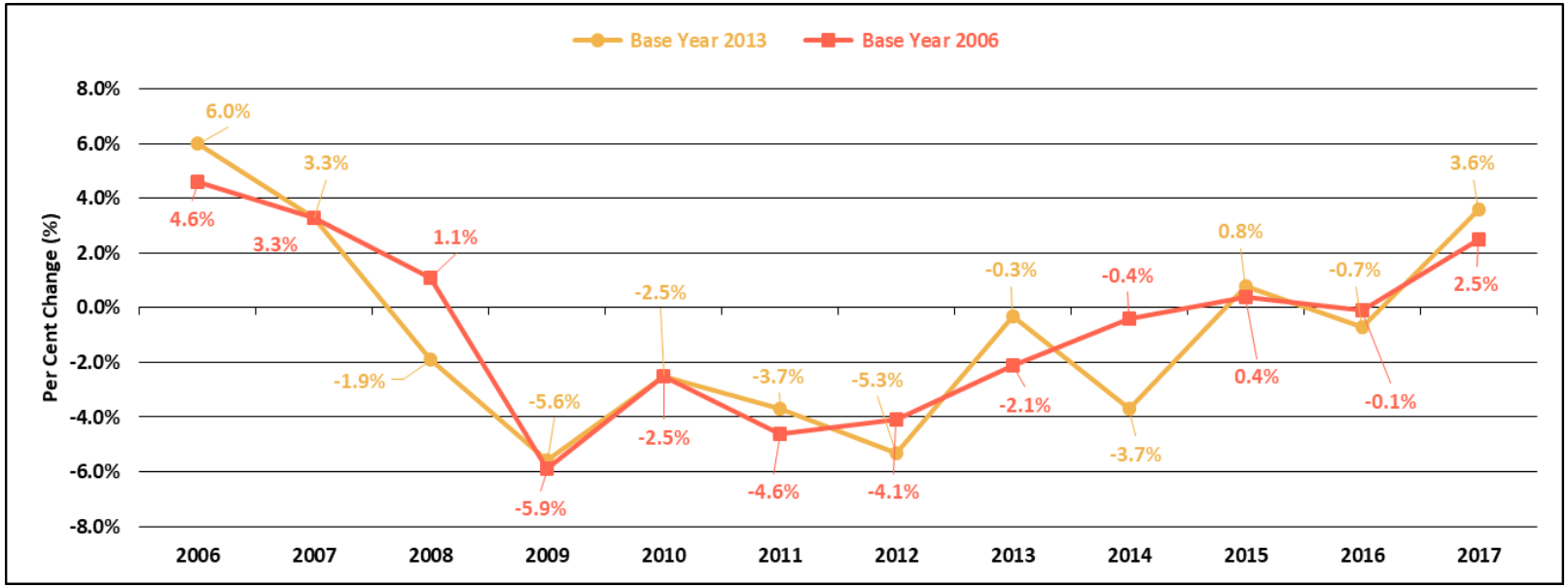
Table 2. Comparison of 2006 and 2013 Share of Income Components in Base Year (2006 and 2013)

	Component of Income	2006 Base Year		2013 Base Year	
		Million BD$	%	Million BD$	%
1	Compensation of Employees	3,376.9	62.9	3,744.2	57.9
2	Taxes less Subsidies on Production and Production	563.2	10.5	624.0	9.7
3	Consumption of Fixed Capital	237.9	4.4	252.2	3.9
4	Operating Surplus/ Mixed Income	1,190.1	22.2	1,845.4	28.5
Gross Domestic Product at Purchasers' Prices		**5,368.1**	**100.0**	**6,465.8**	**100.0**

Table 3. Comparison of Nominal and Real GDP of Two Base Years (2006 and 2013)

Series		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Current Purchasers' Prices (BD$ Million; %) 2006 Versus 2013 Base Year													
2013 Series	BD$M	6,144.4	6,767.0	6,980.3	6,656.3	6,634.5	6,312.7	6,378.2	6,465.8	6,414.0	6,654.5	6,899.9	7,142.3
Per cent change	%	11.3%	10.1%	3.2%	-4.6%	-0.3%	-4.9%	1.0%	1.4%	-0.8%	3.8%	3.7%	3.5%
2006 Series	BD$M	5,368.1	5,897.4	6,178.7	5,938.9	5,853.0	5,607.9	5,567.8	5,647.4	5,670.2	5,890.7	6,092.2	6,269.4
Per cent change	%	10.3%	9.9%	4.8%	-3.9%	-1.4%	-4.2%	-0.7%	1.4%	0.4%	3.9%	3.4%	2.9%
Constant Purchasers' Prices (BD$ Million; %) 2006 Versus 2013 Base Year													
2013 Series	BD$M	7,623.0	7,877.9	7,731.4	7,295.5	7,113.4	6,847.2	6,483.9	6,465.8	6,226.5	6,274.7	6,233.5	6,458.6
Per cent change	%	6.0%	3.3%	-1.9%	-5.6%	-2.5%	-3.7%	-5.3%	-0.3%	-3.7%	0.8%	-0.7%	3.6%
2006 Series	BD$M	5,368.1	5,546.3	5,609.5	5,276.0	5,143.0	4,906.1	4,703.3	4,605.3	4,587.5	4,607.6	4,602.5	4,718.1
Per cent change	%	4.6%	3.3%	1.1%	-5.9%	-2.5%	-4.6%	-4.1%	-2.1%	-0.4%	0.4%	-0.1%	2.5%

Figure 7. Comparison of Real GDP Growth Rates from 2006 to 2013



What is the Impact of Rebasing on the GDP Level for Selected Countries?

The effects of rebasing on GDP levels for Bermuda and selected countries are shown below in Table 4:

Table 4. Implication of GDP Rebasing in Bermuda and Selected Countries

No	Country	Previous Base Year	Latest Base Year	Nominal Changes of GDP (%)
1	Singapore	2010	2015	0.6
2	Malaysia	2000	2005	3.2
3	Indonesia	2000	2010	6.5
4	Uganda	2002	2009	13.1
5	Sri Lanka	2002	2010	14.1
6	**Bermuda**	**2006**	**2013**	**14.5**
7	Maldives	2003	2014	19.5
8	Ghana	2006	2013	24.6
9	Zambia	1994	2010	25.2
10	Kenya	2001	2009	25.3
11	Cayman Islands	2007	2015	27.5
12	Bahamas	2006	2012	27.6
13	Tanzania	2001	2007	27.8

Glossary

Base Year	The starting point for the construction of an index number series. The base period or base year refers to the year in which an index number series begins to be calculated. This will usually have a starting value of 100.
Basic Price	The amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale; it excludes any transport charges invoiced separately by the producer.
Constant Price	A way of measuring the real change in output. A year is chosen as the base year. For any subsequent year, the output is measured using the price level of the base year. This excludes any nominal change in output and enables a comparison of the actual goods and services produced.
Current Price	Also known as the market value, it is the price at which goods are currently being sold in the market.
Debt Ratio	A financial ratio that measures the extent of a company's leverage. The debt ratio is defined as the ratio of total debt to total assets, expressed as a decimal or percentage. It can be interpreted as the proportion of a company's assets that are financed by debt. A ratio greater than 1 shows that a considerable portion of debt is funded by assets.
Extrapolation	The action of estimating or concluding something by assuming that existing trends will continue or a current method will remain applicable
Financial Intermediation Services Indirectly Measured (FISIM)	In the System of National Accounts it is an estimate of the value of the services provided by financial intermediaries, such as banks, for which no explicit charges are made; instead these services are paid for as part of the margin between rates applied to savers and borrowers. The supposition is that savers would receive a lower interest rate and borrowers pay a higher interest rate if all financial services had explicit charges.
Gross Domestic Product (GDP)	Is a measure of economic activity which captures the value of goods and services produced within a country during a given period. GDP can be expressed in nominal or real terms.
Gross Fixed Capital Formation	Is measured by the total value of a producer's acquisitions, less disposals of fixed assets during the accounting period plus certain additions to the value of non-produced assets realized by the productive activity of institutional units.
Gross Value Added (GVA)	The value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry or sector; gross value added is the source from which the primary incomes of the SNA are generated and is therefore carried forward into the primary distribution of income account.
Intermediate Consumption	A national accounts concept which measures 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.
International Standard Industrial Classification (ISIC)	Defined by the United Nations Statistics Division, it is a standard classification of economic activities arranged so that entities can be classified according to the activity they carry out. ISIC Rev 4 was approved in 2008 and superseded ISIC Rev. 3.1.
Investment Ratio	The relationship between an amount of money invested and the profit made from it.
Macroeconomics	A branch of economics that studies how an overall economy (the market systems that operate on a large scale) behaves. Macroeconomics studies economy-wide phenomena such as inflation, price levels, rate of economic growth, national income, GDP, and changes in unemployment.
Net Operating Surplus	Profits remaining after subtracting for operating expenses, taxes, interest, insurance, and dividends.
Nominal GDP (GDP in current prices)	Reflects the value of all the goods and services produced during a given period, using their price at the time of production.

Glossary

Non-Profit Institutions Serving Households (NPISH)	Make up an institutional sector in the context of national accounts consisting of non-profit institutions which are not mainly financed and controlled by government and which provide goods or services to households for free or at prices that are not economically significant. Examples include churches and religious societies, sports and other clubs, trade unions and political parties. NPISH are private, non-market producers which are separate legal entities.
Purchaser's Price	The amount paid by the purchaser, excluding any deductible value added tax or similar deductible tax; the purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place.
Real GDP (GDP in constant prices)	Reflects the value of produced goods and services, but it uses constant consumer and producer price indices to remove the effects of rising price levels (inflation).
Rebasing	The process of replacing an old base year with a new and more recent base year. Serves as a normal statistical procedure undertaken by national statistical offices of countries. This ensures that national accounts statistics present the most accurate reflection of the economy possible.
Savings Ratio	Is used to assess the performance of a company's shares. In addition to being of great interest to the ordinary shareholders, investment ratios are also of interest to potential investors, analysts and competitors.
System of National Accounts (SNA) 2008	Is the latest version of the international statistical standard for the national accounts, adopted by the United Nations Statistical Commission. The 2008 SNA is an update of the 1993 SNA.
Tax Ratio	Is a ratio of a nation's tax revenue relative to its GDP or the market value of goods and services a country produces.
Total Output	Measured by the money (dollar) value of all final goods and services produced by an economy during a given period of time, usually a year.

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