TECHNICAL ASSISTANCE REPORT

SAINT KITTS AND NEVIS
Report on Improving Estimates of Gross Domestic Product Mission (June 5–16, 2023)

JUNE 2023

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CARTAC

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Summary of Mission Outcomes and Priority Recommendations

1.   In response to a request from the Statistics Department (SD) in the Ministry of Sustainable Development (MSD) in Saint Kitts and Nevis a technical assistance (TA) mission took place between June 5–16, 2023 to support improvements to the estimates of Gross Domestic Product (GDP).

2.   The mission supported completion of the re-referencing the estimates of GDP by economic activity (GDP-P) to 2018 prices and prepared a long-run chainlinked constant price series from 1977–2022. The revised series were prepared using the International Standard Industrial Classification revision 4 (updated from revision 3.1), and the Final Intermediation Services Indirectly Measured (FISIM) consumed by businesses was allocated to economic activities. These improvements largely align the GDP series with the standards set out in the *2008 System of National Accounts*.

3.   Analysis of revisions to the estimates was undertaken, as well as real-time study of the revisions arising specifically from benchmarking which identified some key areas for improvement in the quarterly indicators used to anticipate the annual estimates of GDP.

4.   Given the lack of technical resources within the rest of the Ministry, the SD also provides a forecast of the GDP-P series for internal use. The current forecast uses a simple moving average of the equivalent quarters in the previous four years. An improvement was proposed based on the Holt-Winters approach which can be implemented using a simple Excel function. While there are known biases with this method,[1] it will provide more robust forecasts compared to the moving average approach.

5.   A simplified basis for updating the annual, quarterly, and 'island' level series (for both Saint Kitts and for Nevis) was developed and business processing documentation prepared.

6.   The mission also met with representatives from the Eastern Caribbean Central Bank (ECCB), which co-ordinates the compilation of GDP across the eight member countries of the Eastern Caribbean Currency Union (ECCU). This provided an opportunity to explain in detail the basis of compilation of the re-referenced series and revisions to the estimates.

7.   The current price estimates of GDP based on expenditure components (GDP-E) were also reviewed and advice provided on improvements. A longer-term basis for producing independent estimates of Household Final Consumption within GDP-E was discussed. This will be dependent on the development of Supply and Use Tables (SUT), for which the resources required were mapped out. Realistically this may be undertaken in 2025 in respect of 2024.

8.   At the end of the mission the CARTAC advisor discussed its outcome and recommendations with the Director of Statistics. It was agreed that the SD should publish the re-referenced series for GDP in July 2023.

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[1] The Holt-Winters (or triple exponential smoothing) method does not account for the multiplicative nature of moving seasonality and so can produce forecasts which lag behind the underlying trend. While the method is an improvement over simple moving averages, it may not perform well in the presence of significant seasonal or cyclical variations where more sophisticated methods, for example ARIMA models, will generally produce smaller forecast errors.

9. T**o support progress in the above work areas, the mission proposed the following priority recommendations needed to improve estimates of GDP.**

TABLE 1. Priority Recommendations

Target Date	Priority Recommendation	Responsible Institutions
July 2023	*Finalize the compilation of the re-referenced estimates of GDP for quarters up to and including quarter four of 2022 and publish the results together with a note describing the updated series.*	SD
December 2023	*Review potential quarterly indicators and annual estimates for Manufacturing, Communications, and Hotels to identify if more reliable data may be available, including data for the VAT system for the Inland Revenue Department.*	SD
September 2024	*Continue to work with the IRD to access the data on sales from the tax systems which may provide more comprehensive estimates of the level of output in each period.*	SD

10. **Further details on the priority recommendations and the related actions/milestones can be found in the action plan under Detailed Technical Assessment and Recommendations.**

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Acronyms

2008 SNA   *2008 System of National Accounts*

CARTAC   IMF's Caribbean Regional Technical Assistance Centre

CP   Current Price

CPI   Consumer Prices Index

EC$ Eastern Caribbean Dollars

ECCB   Eastern Caribbean Central Bank

ECCU   Eastern Caribbean Currency Union

FISIM   Financial Service Indirectly Measured

GCF   Gross Capital Formation

GDP   Gross Domestic Product

GDP-P   GDP by Economic Activity

GFCF   Gross Fixed Capital Formation

GVA   Gross Value Added

HBS   Household Budget Survey

HFCE   Household final consumption expenditure

IC   Intermediate Consumption

IPD   Implicit Price Deflator

IRD   Inland Revenue Department

ISIC   *International Standard Industrial Classification*

KP   Constant Price

NAS   National Accounts Statistics

PRASC   Project for the Regional Advancement of Statistics in the Caribbean

SD   Statistics Department

SNA   *System of National Accounts*

SUT   Supply and Use Tables

TA   Technical Assistance

WHD   Western Hemisphere Department of the IMF

Section I. Introduction

11. The SD compiles and releases current price and constant price estimates of annual and quarterly GDP based on the ISIC Revision 3.1. Estimates are published for both Saint Kitts and for Nevis as well as the Federal aggregate for the islands combined. The estimates are broadly consistent with the *1993 SNA standards*. The 2006 base year for the GDP estimates is outdated and does not reflect the current structure of the economy. In addition, there is scope to implement the relevant *2008 SNA* recommendations and to further improve the source data and compilation methodology.

12.   The objectives of the current mission were to:

- Re-reference the constant price (KP) annual and quarterly estimates of GDP to 2018 prices and develop long run time series for GDP from 1977, based on a simplified compilation procedure.

- Undertake analysis of revisions arising from the re-referencing.

- Undertake a real-time study of the impact of benchmarking quarterly estimates to annual estimates of GDP.

- Provide advice on improving the estimates of GDP by expenditure components (GDP-E)

- Outline plans for the development of Supply and use tables (SUT) for 2024 and how these can be used to rebase GDP.

Section II. Re-referencing the Estimates of GDP

13.   The data used to estimate annual GDP-P in current prices are derived largely from the SD's National *Accounts Statistics*, which collects data on income and expenditure according to type of economic activity. Additional data are collected for the activities of the agricultural sector, the government sector, and for financial corporations.

14.   Taken together, these sources provide a base for estimation, by economic activity, of the output and intermediate consumption (IC) of formal establishments. However, response to the NAS in recent years has been less than 30 percent, so it is necessary for the SD to make use of other sources, including administrative data for the social security system and tax authority, to support imputation for non-respondents.

15.   Quarterly estimates of GDP-P for Saint Kitts and separately for Nevis, as well as the combined Federal estimates, are published around 60 days after the reference quarter. For example, estimates for the first quarter each year are published in May/June. This requires, in addition to the annual data sources, quarterly indicator data for each economic activity, separately for each of Saint Kitts and for Nevis. Once the annual estimates are available, around two years after the reference period, the quarterly series is aligned with the annual estimates using a benchmarking procedure.[2] The implications of this methodology are considered in section IV.

16.   The SD had planned during 2020 to develop Supply and Use Tables (SUT) for 2018. These were to be used as the basis for rebasing the constant price estimates of GDP onto 2018 prices (from the

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[2] The procedure used is Denton's proportional method, implemented using the IMF's XLPBM software.

current 2006 base year). However, the COVID-19 pandemic delayed the data collection activities needed to support this work.

17.   In the absence of SUT for 2018, following the approach initiated during the previous CARTAC mission in April 2021, the current mission supported the development of re-referenced estimates of GDP onto 2018 price based on existing data sources. Appendix I provides Business Process Documentation for this system and instructions for updating the estimates.

18.   The re-referencing of GDP provided an opportunity to introduce some other improvements. Notably, the estimation and allocation to the IC of economic activities FISIM. In the current GDP publication FISIM consumed by businesses is shown as an adjustment item which is subtracted from the sum of Gross Value Added (GVA) by economic activity to derive total GVA at basic prices. To allocate FISIM to economic activities, data from the ECCB were used to estimate total FISIM consumed by each economic sector (government, households, businesses, and the rest of the world). FISIM consumed by government is considered as part of the IC of government, but also as part of its output (since the method for the estimation of government output based on 'sum of costs'). Allocation of FISIM therefore has no impact on the GVA for the activities of government since it adds equally to both the output and IC. For Households, most FISIM is part of final consumption and therefore does not affect the estimates of GDP-P. However, FISIM arising from mortgage loans made to owner occupiers is considered as IC for these implicit services. Based on the ECCB data, the SD were able to produce annual estimates of the FISIM consumed by the activity of *Owner-Occupied Dwelling Services*. The FISIM consumed by the non-financial corporations in the business sector was allocated to economic activities based on the shares of total GVA for activities which consume FISIM. Therefore, in line with the requirements set out in the *2008 SNA*, it will be no longer necessary to show a separate adjustment line for FISIM.

19.   One further significant improvement introduced during the re-referencing was the adoption of revision four of the *International Standard Industrial Classification* (ISIC). As noted, the published estimates are based on revision 3.1 of this classification. To align with the *2008 SNA standards,* the mission developed a correspondence table between the level of detail for which estimates of GVA are compiled (the 'elementary level') and the ISIC revision 4. The publication tables developed for the re-referenced series are therefore presented using ISIC revision 4.

20.   One other methodological improvement introduced during the mission relates to the estimation of constant price taxes on products. The existing method used by SD has been to deflate the current price estimates based on the deflator for total GVA. Technically, this will incorporate some 'price' changes in the constant price series, for example if the rates of tax change. The recommended method for estimation of constant price taxes is to apply the base year tax rates to estimates of the volume of the supply of each product in each period. In Saint Kitts and Nevis, the detailed data required to undertake this calculation are not available. A reasonable short cut method is therefore to extrapolate the base year level of taxes on products in current prices by an indicator of the volume change, in this case the volume of GVA was used. This change in the method gives rise to some significant revision to the estimated change in the volume of taxes (see next section which considers the revisions arising from re-referencing)

21.   The previous paragraphs describe the basis of estimation for the re-referenced GDP series for 2000–2018 in both current prices and 2018 constant prices. The mission also

developed historical series for GDP in both current and constant prices, covering the years 1977–2022.

22.   **In current prices, the method is straightforward and involved 'backcasting' the levels of GVA for each 'elementary' economic activity using the previously published growth rates and adding the components together to produce the aggregate series.**

23.   **In constant price the method is similar except that all levels (including aggregate GDP) are backcast based on previously published growth rates.** This is the method referred to as 'chain linking' and preserves the previous base years before the latest 'link' year (in this case 2012). The method is used to ensure the constant price series adequately reflects the structure of the economy in each year. To achieve this, it was necessary to chain-link the 2006-based constant series with the 2018-based constant price series. This linking is needed so that, for example, the weights used to aggregate the detailed series for economic activities in 2006 are based on estimates of the structure of the economy in that year. Chain linking in this way requires a 'link year' to be chosen, which is usually the year half-way between the previous and latest base years. In this case, 2012 was selected as the link year. The basic concept here is to use the 2006 shares of current price GVA as the 'weights' for aggregating the constant price series for years between 2000–2012, while the 2018 shares are used for the later years. In short, chainlinked series have potentially many 'base years,' but only one 'reference year' (in this case, 2018).

24.   **One feature of chain linking is that the property of 'additivity' is lost in the years before the link, that is that the sum of constant prices GVA across all economic activities is not equal to the total constant price series for years before 2012.** This lack of additivity arises because the constant price series are actually indexes of the change in the volume of economic activity and, as such, do not have an intrinsic 'level' (other than that they are referenced to the value of current price GVA in the relevant base year). In contrast, by their nature, current price series are always additive in this sense.

Recommended Action:

The SD should
- *Finalize the compilation of the re-referenced estimates of GDP for quarters up to and including quarter four of 2022 and publish the results together with a note describing the updated series.*

Section III. Revisions Arising for the Re-Referencing.

25.   **To understand the impact of re-referencing on the published series, analysis of revisions was undertaken for both the current price and constant price series.** The following charts show the extent of revisions to growth in GDP at the time of writing this report. While the final published series may incorporate more recent data, notably for 2022, the charts can be taken as indicative of the extent of revisions when the re-referenced series are published.

CHART 1.A Comparison of Annual Percentage Change in Total GDP in Current Prices, Published versus Re-Referenced Series (2013–2022)

CHART 1.B Comparison of Annual Percentage Change in Total GDP in Constant Prices, Published Versus Re-Referenced Series (2013–2022)
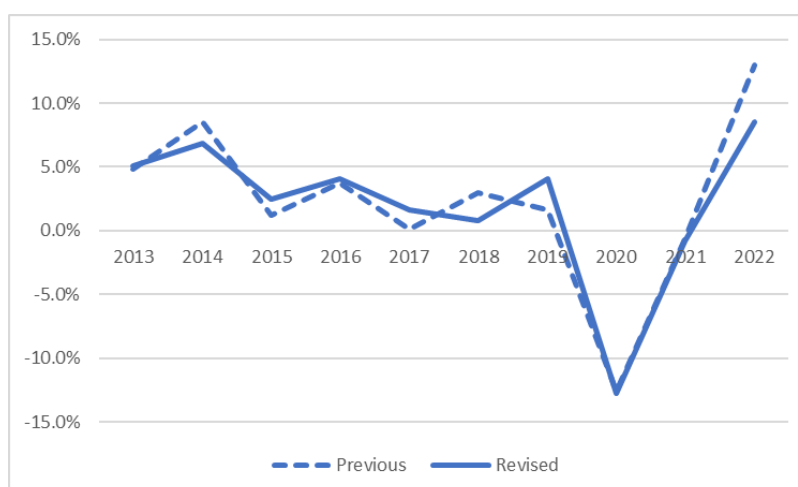
26.   The revisions to the current price series shown in figure 1a arise from the methodological improvements described in above, other than for 2022 for which there were, additionally, revisions arising from taking on more recent data. For the constant price series, figure 2b only shows the years 2013–2022 because, as a consequence of chain linking, there are no revisions to the earlier estimates.

27.   A detailed analysis was undertaken of the contributions to the total revision to the annual growth in GDP from each economic activity. This enabled further quality assurance of the series, as well as providing a basis for the SD to explain reasons for revisions to users when the series are published. Some key findings for this analysis are:

For the current price series:
- The published estimate of growth for 2022 is 20.2 percent, while the revised figure is 15.3 percent. Of the total revision of -4.9 percentage points, -2.5 points are attributable to the manufacturing activity where new annual data have replaced the quarterly indicator data. A further -0.8 percentage points of the total revision is attributable to the Hotels

activity, again resulting from more recent annual data being incorporated into the estimation.

For the constant price series:

- The published estimate for 2022 of 13.0 percent has been revised down to 8.5 percent. As with the current price estimates, and for the same reason, manufacturing accounts for most of the revision, at -2.7 points. In addition, the change in the methodology used to estimate the volume of taxes, noted above, led to a further -2.2 percentage point contribution to the total revision to GDP. Chart 1c shows the revision to the estimate's annual percentage change in the taxes on products in constant prices.
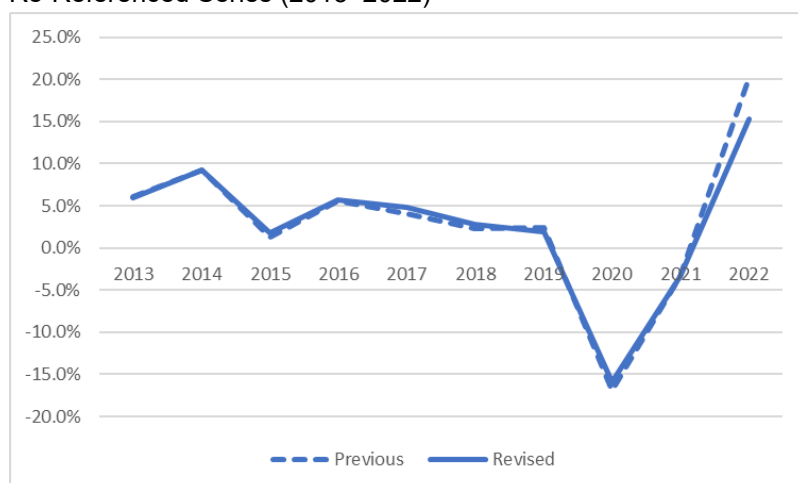
CHART 1.C Comparison of Annual Percentage Change in Taxes on Products in Constant Prices, Published Versus Re-Referenced Series (2013–2018)
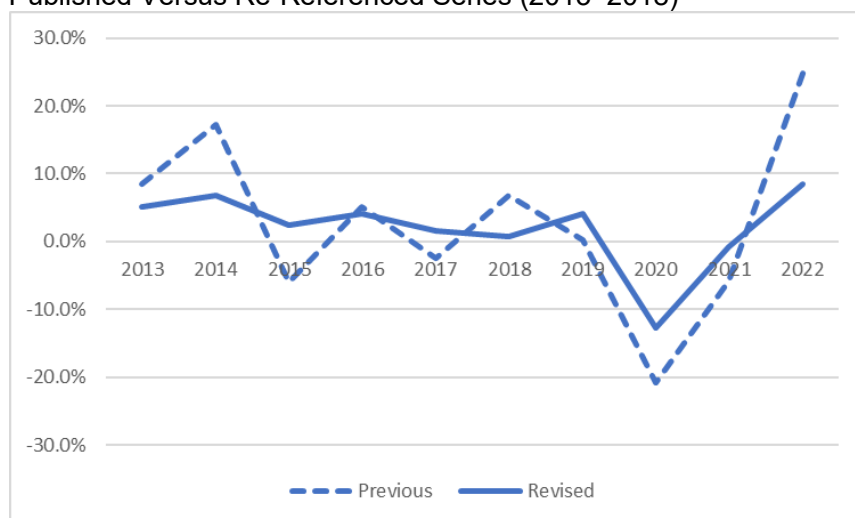
Section IV. A Real Time Study of Revisions Arising from Benchmarking.

28.   As noted above, the SD uses quarterly indicator data to 'anticipate' the annual series for GDP and there can be as much as a two-year lag between the first estimates for any quarter and the estimates based on the annual 'benchmark' data. This benchmarking will cause revisions of the estimates of GDP. To limit the extent of revisions, it is important therefore that the annual percentage changes in the quarterly indicators are closely correlated with those based on the annual data.

29.   To understand the impact of benchmarking, as it gives rise to revisions, the mission undertook a real-time study to establish what happens when the quarterly indicator series are benchmarked to the annual data when these become available. The methodology for these studies was presented to the SD team during the mission. Note that the study is designed to isolate revisions resulting purely from the benchmarking procedure and does not attempt to take into account other possible reasons for revision, for example those resulting from revisions to the actual data.

30.   The basic idea behind real-time revisions studies is to use the available historic data for the annual and quarterly series and simulate what would have happened each year as the first estimates of the annual percentage changes in GVA based on the quarterly indicator

data are revised when series are benchmarked to the annual data. Using this approach, summary metrics of the revisions can be calculated for each series, including the root mean square error as a percentage of the average absolute revision, and the average revision (sometimes referred to as the 'bias'). Taken together, these metrics provide a basis for assessing if the methodology and/or data sources for the series are fit for the purpose of estimation of quarterly GVA. The key question here is whether the first estimates (based on quarterly data) are useful to users as early estimates of the later estimates (based on the annual series). More details on the purpose of the of these studies and the calculations involved are set out in Appendix II.

31. **The study used data from 2012–2022 and considered the revisions arising when estimates based purely on the quarterly indicators data were replaced by those based on annual data.** Starting from 2015, the first estimates for each year, based on the indicator data, were calculated. The 'second estimates' based on the annual data was then computed and the resulting revision stored. The study undertook this for all 44 'elementary' components of total GDP so that the contributions to the revision to total GDP could be analyzed in terms of the contributions from each activity. An average of the absolute contributions to the total revision was calculated for the years 2015–2022. Tables 1a and 1b show the largest five contributions to the average absolute revision to the annual percentage changes in total GDP for the constant 2018 prices series (1a) and the current price series (1b).

TABLE 2. Average Absolute Percentage Point Contributions to the Total Revision to GDP in Constant 2018 Prices (Average Taken Over 2015–2022)

Rank	Activity	Average absolute contribution	% of total absolute revision
1	Manufacturing	1.35	18%
2	Communications	0.96	13%
3	Hotels	0.75	10%
4	Rented Dwellings	0.75	10%
5	Taxes on Products	0.72	10%

TABLE 3. Average Absolute Percentage Point Contributions to the Total Revision to GDP in Current Prices (Average Taken Over 2015–2022)

Rank	Activity	Average absolute contribution	% of total abs revision
1	Manufacturing	2.39	28%
2	Hotels	1.70	20%
3	Rented Dwellings	0.85	10%
4	Global FISIM	0.57	7%
5	Private Education	0.52	6%

32.   The tables show that the manufacturing activity was the biggest cause of revision to the annual percentage changes in GDP during this period, accounting for 18 percent of the total absolute revision to the constant price series and 28 percent to the current price series. The estimates of the Hotels activity were also a prominent cause of the revisions.

33.   Just considering manufacturing, the current price quarterly indicator is the wages and salaries of employees, and the volume series is the numbers of weeks worked, both of which are reported to the Social Security Board. The annual series is based on data from around seven companies for the value and physical quantities of production (covering electronic good, beverages and cement). Chart 2 compares the 'first estimate' of the annual percentage change in GVA for manufacturing (based on the indicator data) and the 'latest estimate' (based on the annual data).

CHART 2.   Comparison of Annual Percentage Change in Manufacturing GVA in Constant Prices, First Estimate Versus Latest Estimate
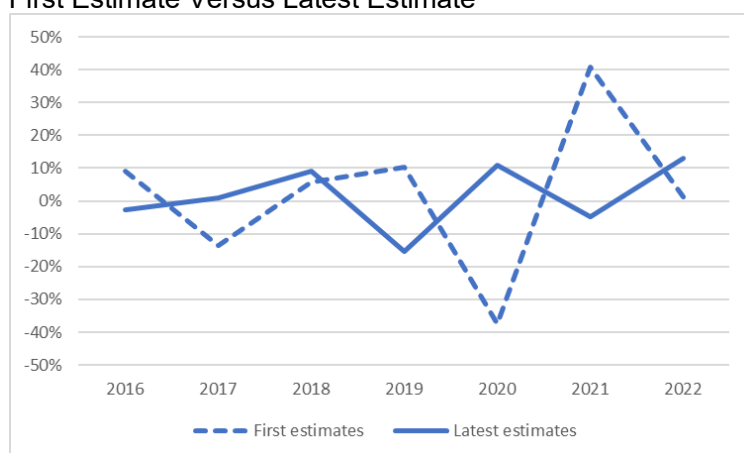
34.   Chart 2 shows that there is very low correlation between the initial estimates, based on the indicators data and the latest, based on the annual data. In fact, the correlation coefficient between the two series is -0.51, that is the *inverse* of the indicator series correlates reasonably well with the annual series. The question then is, which of the two series better represents the actual changes in manufacturing GVA? Both are problematic in that the quarterly current price series ignores changes in operating surpluses, amongst other things, and the volume series (the number of weeks worked) will not take account of productivity and changes in hours worked. On the other hand, the annual series is based on a very limited sample and the measure of the physical quantities of electronic components produce and so on is dependent on the stability of the nature of the products being produced over a long time period. The SD should consider alternative data sources which might better reflect the actual changes in GVA for this activity.

Recommended Actions:

The SD should
▪ *Review potential quarterly indicators and annual estimates for Manufacturing, Communications, and Hotels to identify if more reliable data may be available, including data for the VAT system for the Inland Revenue Department IRD).*
▪ *Continue to work with the IRD to access the data on sales from the tax systems which may provide more comprehensive estimates of the level of output in each period.*

Section V. Improving Estimates of GDP by Expenditure Components

35.   The SD also produce current price estimates of GDP by expenditure components (GDP-E). The methods used for the components are set out in Table 2.

TABLE 4. Components of GDP-E and Methods Used

Component	Source
Final Consumption	
Household Final Consumption Expenditure	Residual between GDP-P and total of other components of GDP-E
Expenditure of St. Kitts-Nevis Government	Government accounts
Gross Capital Formation	
Gross Fixed Capital Formation	
Land Development	Imports of goods
Transport Equipment	Imports of goods
Other Equipment	Imports of goods
Construction	Model based on GDP-P estimates
Changes in inventories	Not estimated
Acquisition less disposal of valuables	Not estimated
External trade	
Exports of Goods	External trade statistics (Eurotrace)
Exports of services	Balance of payments
Imports of Goods	External trade statistics (Eurotrace)
Imports of services	Balance of payments

36.   The estimates of government expenditure and the components of external trade are based on reasonably complete and authoritative data. The mission reviewed the other components and proposed some further refinements, including:

- Making wider use of the external trade statistics to identify imports (less re-exports) of capital goods based on the classification of capital goods provided by the United Nation's *Broad Economic Categories*, which can be linked to the classification used by the Custom's

department (the Harmonized System[3]). This could include a wider set of products than currently presented in the GDP-E table.

- Including an estimate of Acquisition less disposal of valuables (which forms part of the Gross Capital Formation) based on data on imports of such products.

- Calculate the estimate of Construction GFCF based on the same model used to estimate construction output from the GDP-P perspective and an applying a factor to remove estimated repair and maintenance (which does not form part of capital formation). Such factors for other countries in the ECCU are generally between 5 and 10 percent of total construction output. An approximate factor for Saint Kitts and Nevis could be derived from Supply and use Tables (see next section) but an in the meantime a factor of 7.5 percent may be a reasonable proxy.

- Estimation of changes in inventories is generally challenging both because of the conceptual difficulties of valuation (notably the removal of holding gains/losses) but also because of the quality of data generally available based on surveys. While models of the changes are sometimes used, for example using data for imports, these can be complicated to establish and maintain. But as a default, an estimate of zero in each period may be reasonable given the pressures for 'just in time' supply chains and the motivation of business to keep only small levels of inventory relative to sales.

- Estimates of final expenditures for Non-profit institutions service households (NPISH) could be added to the table, based on data for the output of such units derived for the GDP-P series.

37.   The biggest challenge will be to develop independent estimates of Household Final Consumption Expenditure (HFCE) which are currently made as a simple residual between the total for GDP-P less the other components of GDP-E. While the 'residual' method is not uncommon, it essentially depends on the estimates for the other components of GDP-E as being reasonably accurate: any errors in their measurement will feed directly into the estimate of HFCE (as will any errors in the estimates of GDP-P). Developing independent estimates of HFCE will be dependent on first developing Supply and Use Tables, which is the subject of the next section of this report.

Recommended Action:

The SD should
- Introduce improvements to the GDP-E series based on the proposals in paragraph 35.

Section VI. Developing Supply and Use Tables

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[3] The Harmonized System is a standardized numerical of classifying traded products used by customs authorities around the world to identify products when assessing duties and taxes and for gathering statistics. The HS is administrated by the World Customs Organization (WCO) and is updated every five years.

38.   As noted in Section I, the SD had planned develop SUT for 2018, which would have formed the basis of re-referencing the GDP-P series, but this was not possible because of the constraints introduced by the covid-19 pandemic, and following preoccupation with the conduct of the Population and Housing Census. However, many if the datasets needed to compile SUT were collected including the Household Budget Survey (HBS) for 2018/19. That survey would have been a central component of the 2018 SUT.

39.   The mission discussed the prospects for developing SUT for 2024 during 2025, and the data required for this. These are summarized in Appendix III.

40.   Of note in the appendix is the estimation of the vector for HFCE using of price and volume updating of the 2018/19 HBS results by product. This has been used successfully in other countries in the region and entails extrapolation of the level of household expenditure for each commodity in the HBS using data for population changes (the 'volume' indicator) and the changes in the Consumer Prices Index (CPI) for the commodity (the 'price' indicator).

41.   **The SD has very limited experience in the compilation of SUTs, so the mission provided an overview of the methods used and demonstrated tools which can be used to undertake balancing of the tables.** Appendix IV sets out possible product/activity dimensions for the SUT. Based on these, if the SD can prepare the data into the required format, a CARTAC mission in 2025 could enable the production of balanced tables for 2024. These could then be used as the basis for rebasing the GDP series to 2024 prices, and for improving the methods used to derive estimates of HFCE in the GDP-E series.

Recommended Actions:

The SD should
- *Review the proposed product and activity dimensions presented in Appendix IV to establish if the data sources needed to populate SUT at that level of detail may be available in principle.*
- *Develop the data sources needed for SUT for 2024 based on proposals set out in Appendix IV, classified according to the product/activity structure in Appendix IV.*

Section VII. Detailed Technical Assessment and Recommendations

TABLE 5. Detailed Technical Assessment

Priority	Action/Milestone	Target Completion Date	Actual completion date
Objective: Strengthen compilation and dissemination of NAS - Comprehensive updates and re-referencing			
Outcome: Methodological basis for the statistics follows internationally accepted standards, guidelines, or good *Outcome Indicator: New benchmarks have been developed aligned to international statistical standards and using the latest most comprehensive source data available*			

Priority	Action/Milestone	Target Completion Date	Actual completion date
M	Constant prices estimate of GDP (and its components) have been updated (re-referenced) using the most recent benchmark estimates	6/16/2023	Achieved
H	Base year updated to 2018	7/31/2023	
Outcome: Statistical techniques are sound *Outcome Indicator: Internationally recommended benchmarking techniques are used*			
M	GDP estimates based largely on *2008 SNA* standards	6/16/2023	Achieved

TABLE 6. Summary of Recommendations

Priority	Recommendation	Target Completion Date
H	*Finalize the compilation of the re-referenced estimates of GDP for quarters up to and including quarter four of 2022 and publish the results together with a note describing the updated series.*	July 2023
H	*Review potential quarterly indicators and annual estimates for Manufacturing, Communications, and Hotels to identify if more reliable data may be available, including data for the VAT system for the Inland Revenue Department.*	December 2023
H	*Continue to work with the IRD to access the data on sales from the tax systems which may provide more comprehensive estimates of the level of output in each period.*	September 2024
M	*Introduce improvements to the GDP-E series based on the proposals in paragraph 35.*	December 2023
M	*Review the proposed product and activity dimensions presented in Appendix IV to establish if the data sources needed to populate SUT at that level of detail may be available in principle.*	December 2023
M	*Develop the data sources needed for SUT for 2024 based on proposals set out in Appendix IV, classified according to the product/activity structure in Appendix IV.*	December 2023

Section VIII. List of Officials Met During the Mission

Name	Institution	E-mail Address
Mr. Carlton Phipps, Director of Statistics	*Statistics Department*	carlton.phipps@gov.kn
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Ms. Corrine Telfer-James	*Eastern Caribbean Central Bank*	Corinne.Telfer-James@eccb-centralbank.org

Appendix I. Business Processing Documentation for the Compilation of GDP

St Kitts and Nevis

Business Process Documentation for Estimation of Gross Domestic Product by economic activity

Contents

A. Introduction

This document sets out the calculation steps and processes needed to maintain the GPD-P estimates in Saint Kitts and Nevis.
The system was developed in June 2023, and comprises the following workbooks:

GDP_SKN_Annual_Data.xlsb
GDP_SKN_Final.xlsb

These are described in Section A, while Section B describes the basis for updating the series.

B. The workbooks

1.   Workbook GDP_SKN_Annual_Data.xlsb

This produces the estimates of annual GDP in both current and constant prices for Saint Kitts and Nevis combined (SKN) based on the selected base year. It is used purely to produce the annual estimates which are needed as benchmarks for the estimates in the published tables (as produced in the workbook GDP_SKN_Final.xlsb).

Note: The **Instructions** worksheet allows the compiler to select the reference year for GDP. This relates to the year used in the worksheet **BM**, se later.
The workbook comprises 7 broad 'groups' of worksheets, as set out in Annex 1. The purpose of each group and an outline of the methods used is provided in the sections below.

Group 1: Economic Activities

There are 27 worksheets in this group, one for each economic activity, plus two for taxes and subsidies (T_S_Tax and T_S_Subs).

Each of these workbooks is set up broadly in the same way, with:
  i)   Links (shown in light blue) to 'indicator' data from the GVA system.
  ii)   Links to the BM worksheets (shown in yellow) to the benchmark levels of Output, IC and GVA for each sub-activities included in the worksheet. *Note: these levels exclude the allocation of FISIM to economic activities, which is added later*.

The broad procedure used in most of these worksheets it to
  i)   Calculate indexes (shown in light green in the worksheets) based on the indicator data. These indexes are referenced to the base year for the series, which is the year indicated in cell B2 in the BM worksheet). Changing this value will re-reference all calculations in the workbook to the selected year. This should only be done when the results need to be based on a different year.
  ii)   Use the index (divided by 100) to extrapolate the base year level of output in current prices (CP), and for output in constant prices (KP) and similarity for CP intermediate consumption (IC). KP IC is derived by multiplying the KP output by the base year IC/O ratio (his is the method known as 'single extrapolation').
  iii)   GVA is then calculated in CP and KP as the difference between output and IC.

Group 2: Benchmark Data
Comprises two worksheet:

BM
BM_Add

These worksheets contain the benchmark levels of Output and IC (before and after the inclusion of FISIM), together with (in the BM_Add worksheet) additional, more detailed, information for the benchmark year, as required for some series.

The values in blue in BM are linked to the live GDP system and are therefore the current estimate of Output and IC. If additional data for Output or IC are added into columns F and G these get added to the published levels and the results in columns H:K set the levels of activity for each of the 51-component series.

Group 3: GDP Excluding FISIM Allocation.

Comprises FOUR worksheets:

Summary
GDP_KP_X
GDP_CP_X
O_KP
O_CP

These worksheets link to the Summary worksheet in Group 1. They show GDP before the allocation for FISIM to IC of each economic activity. They are therefore 'working' worksheets, which do not contain series which should be published. They are used in the allocation of FISIM, see later.

Group 4: FISIM Calculations

Comprises three worksheets:

FISIM_KP
FISIM_CP
FISIM_Sectors

These worksheets calculate the amount of FISIM to allocate to each activity. The allocation is based on the proportion of GVA in each activity.

Group 5: Detailed Results

Comprises seven worksheets:

GDP_KP
GDP_CP
IC_KP
IC_CP

These worksheets contain the final detailed annual series in CP and KP needed for the benchmarking of the final series (see the GDP_SKN_Final.xlsb). Note the IC in the IC_CP and IC_KP includes the allocation of FISIM from group 4.

Group 6: Transposed Results

Comprises four worksheets:

IC_KP_tran
IC_CP_tran
O_KP_tran
O_CP_tran

These are simply transpositions of the results are needed in the workbook GDP_Q_Summary.xlsb (see later).

Group 7: Latest Year

Consists of one worksheet:

| Latest_Yr |

This worksheet is used to indicate the latest year for which complete annual data have been entered in the Activity worksheets. It is needed because it is possible that only partial data are in the linked Activity workbooks and, while there may be number for the latest year, say, they are incomplete. The complier therefore needs to specify in this worksheet which activities have been fully updated.

2. Workbook GDP_SKN_Final.xlsb

This workbook is used to calculate the annual quarterly GDP for SKN (and for Saint Kitts (SK) and for Nevis (Nev)

Note: The **Instructions** worksheet allows the compiler to select the latest quarter for which results are to be produced, as well as the units to be shown on the final tables (EC$s or 000s EC$s)
The workbook comprises 8 broad groups of worksheets, as set out in Annex 1. The purpose of each group and an outline of the methods used is provided in the sections below.

Group 1: Indicator Data

This is just one worksheet:

| Data |

This links to each of the workbooks in the existing GDP system and takes the total GVA in CP for each of SK and Nev as well as the price indictor for each (based on the GVA deflator).
Note: To calculate the GVA deflators, the existing workbooks now include a column in each of the 'Quarterly Summary' worksheet in the existing ISIC workbooks. For example, for Livestock the deflators are calculated in columns AT:AU of the 'Quarterly Summary' worksheet.

Group 2: Results for Economic Activities

This comprises 44 worksheets, one for each economic activity (including taxes and an empty worksheet for subsidies, since there are no subsidies after 2005).

Each of these worksheets is identical in terms of its calculation and layout.

The basic method is to take the series for CP GVA for SK as an indicator (in column F), and the Price index for GVA for SK as an elementary price index for the activity (in column H). The Price index is then re-referenced to the selected base year (in the BM worksheet), in column I. This is then used to deflate the CP GVA indicator to derive an indicator for KP GVA for SKN (in column H). The same procedure is used for Nevis in columns K: N. Columns C:D calculate indicators for the GVA for SKN.

It is important to remember that these are simply indicators of the changes and not the actual estimates of GVA. The calculation of the actual GVA series is undertaken in columns R: Y as described below.

Next, in columns AB:AG the summary annual indicator series is calculated for SK and for Nevis, and a total indicator for SKN in columns AH:AI. The ratio of SK to total SKN (CP and KP) is shows in columns AJ: AK.

The actual annual SKN GVA (CP and KP) are then shown in columns AP and AT based on the results in the workbook GDP_SKN_Annual_Data.xlsb. This workbook should therefore be updated first before the quarterly results are produced.

In columns AX and AY, the annual series for GVA for SKN are extrapolated for all quarters in the years after the latest annual results based on the respective sum of the annual indicators (in columns AH and AI). This step is needed to ensure that the final quarterly series for the GVA (CP and KP) are benchmarked to the actual annual series up to the latest annual year and also to the indicator's series for the later years.

Next the annual series for SK and Nevis are calculated separately by applying the proportion of SK to SKN (see column AK for the CP series) to the total SKN series in column AX. The GVA for Nevis is then derived in columns BE:BF as the difference between SKN and SK.

The previous steps provide the necessary 'ingredients' to produce benchmark estimates of GVA for SKN and SK, with the Nevis results being derived as the difference. This benchmarking is undertaken using the IMF 'XLPBM' function, which, in this workbook, is implemented as '=Bench ()'. The code for this is embedded into the workbook. The benchmarking takes place in columns R:S for SKN and in columns U:V for SK. Columns X:Y calculate the GVA for Nevis as the difference between these two.

The method is the same in each of the worksheets in Group 2.

Group 3: Aggregate GDP Series

There are four worksheets in this group:

GDP_CP_A
GDP_KP_A
GDP_CP_Q
GDP_KP_Q

They simply aggregate the results for the Group 2 worksheet into time series in CP and KP, both annual and quarterly and for SKN SK, and Nevis separately.

Group 4: The Aggregation Structure

Has just one worksheet:

Agg_Stru

This 'controls' the way that aggregation takes place across the levels of the GDP series. It is used in the way the results are presented.

Columns K:L are the most detailed level of the series (the 'elementary' level) and correspond to the 44 worksheets in Group 2. These are correlated to the lowest level of ISIC Revision 4 in columns I:J.

Columns A: B give the higher-level aggregates in ISIC Rev 4.

Columns P: R set out the level of detail which will be shown in the final tables in Group 5. Tax and Subs must be left alone, but the other rows can be adapted to include the content so the table.

Column R indicates if the series is derived form addition of other rows in the table (=1) or if the series is an aggregate (= blank).

Columns W:X and AD:AF provide alternative presentations. Which could be simply copied to the columns P: R.

As an example of how this procedure can be used, consider if only the aggregate series 'Accommodation and food service activities' is needed and the detailed series ('55' and '56') are not required on the tables then the data on rows with '55' and '56' could be just be deleted and the heading 'Accommodation and food service activities' would then just need a '1' in column R.

i.e., replace the rows:

I	Accommodation and food service activities	
55	Accommodation service activities	1
56	Food and beverage service activities	1

with:

I	Accommodation and food service activities	1

As another example, this time where more detail is needed, consider if the series 'Public Administration, & Social Security' is required split between Public Administration (ISIC code 84_1) Public Social Security Services (ISIC 84_2), but the aggregate 84 heading is also needed. In this case the row:

O	Public Administration, & Social Security	1

would be replaced by three rows:

O	Public Administration, & Social Security	
84_1	Public Administration	1
84_2	Public Social Security Services	1

(and the remaining rows of the table copied down)

Note the blank in the final column on the first row indicating that 'O' is not an elementary series (because the details series have been added to the table).

Group 5: The Benchmark Levels

Consists of one worksheet

BM

Which is linked from the GDP_SKN_Annual_Data.xlsb workbook.
It is not used in the calculations and is included for reference only.

Group 6: The Results

This has two subgroups, one for the KP and one for the CP series (and the deflator), and consists of eleven worksheets (including one for the Implicit Price Deflator, 'DEF'). i.e.

DEF_Q_SKN
CP_Q_SKN
CP_Q_SK
CP_Q_N
CP_A_SKN
CP_A_SK
CP_A_N
KP_A_SKN
KP_A_SK
KP_A_N
KP_Q_SKN
KP_Q_SK
KP_Q_N

These worksheets simply re-present the results from Group 3 according to the aggregation structure (in Group 4).
These are the final publication tables for the quarterly series.

Group 7: Contributions Analysis
Consists of two worksheets:

Cont_CP_A_SKN
Cont_KP_A_SKN

These show the contributions to the annual growth in total GDP (in CP and KP terms), in percentage points. They are only presented for SKN combined, and only for the annual series.

These should be used when quality assuring the results, to establish which ISIC headings are contributing most to the annual percentage changes in total GDP. They can also be sued as the basis of supplementary tables showing the main contributions which can be presented alongside the GDP published results.

Group 8: Revisions Analysis

Consists of six worksheets:

Prev
Rev_CP
Rev_KP

These were developed to establish the reasons for the revisions in KP to the growth in GDP. They are not required as part of the regular annual GDP calculation.

Pevs has the results as published in May 2023, based on ISIC Rev 3.1

Revs_CP and Revs_KP
Present and analysis of the revisions arising for the rebasing, comparing the actual published series with the rebased series (all based on ISIC 3.1).

C. Updating the GDP-P Series

The GDP-P system is built 'on-top' of the existing GVA system, meaning that it is designed so that the regular basis for data capture can continue as usual.

No changes to the calculations in the existing GVA workbooks were required, although some additional calculations were added to some worksheets, for example to [ISIC A011 - Crops.xlsb] which now includes a calculation of the constant price series for total crop output based on the base year in the BM worksheet in the GDP_ SKN_Annual_Data.xlsb workbook (see row 397 in the [Production & Prices] worksheet)in the Crops workbook). A similar calculation has been added to the Livestock workbook.

The steps to update the GDP series consists therefore of:
For the GDP_SKN_Annual_Data.xlsb workbook:

1. Update the GVA workbooks as usual. To see a list of these, use the "Data->Edit links' menus in Excel and click on 'Check status' to make sure all links are fully 'OK'. If there are issues with any links, they will need to be updated using the 'Change source' option in the Data->Edit links dialog box.

2. Update the GDP_SKN_Annual_Data.xlsb workbook. This involves copying the formula 'to the right' for all of the ISIC worksheets in Group 1, 2, 3 4, 5, 9 and 10.

3. Update the Latest_Yr worksheet so that the latest complete year for which estimates have been made for each activity is correctly specified.

For the GDP_SKN_Final.xlsb workbook:

Simply update the individual activity workbooks (as per step 1, above) and ensure the workbook
GDP_SKN_Annual_Data.xlsb is fully updated.

The calculations are then automatically.

However, to ensure that the links to the individual workbooks in the main GDP system are updated in this
workbook, it is advisable to open each one (there are 44 in total) and then check the links in the workbook
(using the 'Data->'Edit Links->Check Status' procedure in Excel to ensure all the data are fully updated.

Annex 1: Groups of Worksheets in the Workbooks
GDP_SKN_Annual_Data.xlsb

Group #:	1	1 (cont)	2	3	4	5	6	7
Group name:	Economic Activities		Benchmark data	GDP excluding FISIM allocation	FISIM calculations	Detailed results	Transposed results	Latest year
The worksheets:								
	Summary		BM	GDP_KP_X	FISIM_KP	GDP_KP	IC_KP_tran	Latst_Yr
	T_S	I_61_63	BM_Add	GDP_CP_X	FISIM_CP	GDP_CP	IC_CP_tran	
	A011	I_62		O_KP	FISIM_Sectors	IC_KP	O_KP_tran	
	A_Sugar	I_64		O_CP		IC_CP	O_CP_tran	
	A012	J						
	A020	J_Ins						
	B05	K						
	C14	K71						
	C_	K72						
	E40	K73_74						
	E41	Pub						
	F	M80						
	G	N85						
	H	O90_93						
	I	P						

Group #:	1	2	2 (cont)	3	4	5	6	7	8
Group name:	Indicator Data	Results for Economic Activities		Aggrgate GDP series	Aggregation structure	Benchamrk	Results	Contributions	Revisions
	Data	A011	J_Ins_NLife	GDP_CP_A	Agg_Stru	BM	DEF_Q_SKN	Cont_CP_A_SKN	Prev
		A012	K_OOD	GDP_KP_A			CP_Q_SKN	Cont_KP_A_SKN	Rev_CP
		A020	K_REA	GDP_CP_Q			CP_Q_SK		Rev_KP
		B05	K_RDW	GDP_KP_Q			CP_Q_N		
		C14	K71				CP_A_SKN		
		C_	K72				CP_A_SK		
		E40	K73_74				CP_A_N		
		E41	L75_1				KP_A_SKN		
		F	L75_2				KP_A_SK		
		G	M80_NME				KP_A_N		
		Hot	N85_NMH				KP_Q_SKN		
		Res	M85_NMSS				KP_Q_SK		
		I	M80				KP_Q_N		
		I_61	N85						
		I_63a	O9302						
		I_63b	O9303						
		I_62	O9309						
		64	O91						
		Ja	O9249						
		Jb	O92						
		Jc	P						
		J_Ins_Life	T_S_tax						
			T_S_subs						

Appendix II. Real Time Revisions Studies

Introduction

A real-time study simulates the revisions which arise from benchmarking, by taking data for each period and making estimates that reflect what would have been published at that point in time.

For example, if the quarterly series is produced two years ahead of the time when annual benchmark data are available, the estimates for 2015 published in 2016 will be based solely on quarterly data. Once benchmark data for 2015 become available, in 2017, the 2016 estimates will be benchmarked to these, and revisions will result.

A real time study therefore produces a series of estimates for each year (known as 'maturities' of the estimates) with the differences between successive estimates for the same period showing the evolution of the series and the resulting revisions. In practice, there may be other reasons for revision, including revision to the underlying data sources. So, to be clear, a real time study only analyses revisions arising purely from the practice of benchmarking the quarterly to the annual series. It does not attempt to simulate the total revisions which have occurred, which will include revisions arising as a result of changes to the indicator data or annual data themselves, which will include revisions due to late responses and so on.

Step by step guide for undertaking a real time revisions study.

The data required:
Annual estimates of the level of constant price output for the activity
Annual sums of the quarterly constant price indicator data for the activity
　[analysis can also be undertaken based on current price data]

Step 1: populate the framework below for each year based on the actual annual estimates (shown in yellow). Extrapolate the last annual estimate in each column by the percentage change in the annual (sum of quarters) based on the indictors data (shown in green).
Each column in the table represents a point in time. For example, the column '2016' is the point in time when annual data for 2016 were available, but there were no data yet for 2017 and 2018. Therefore, the indicator data needed to use used to 'project' the estimates forward for two years.

	2014	2015	2016	2017	2018	2019	2020	2021
2012	438,380	438,380	438,380	438,380	438,380	438,380	438,380	438,380
2013	523,596	523,596	523,596	523,596	523,596	523,596	523,596	523,596
2014	381,381	381,381	381,381	381,381	381,381	381,381	381,381	381,381
2015	390,786	424,958	424,958	424,958	424,958	424,958	424,958	424,958
2016	362,287	396,459	356,930	356,930	356,930	356,930	356,930	356,930
2017		378,211	346,587	344,180	344,180	344,180	344,180	344,180
2018			320,433	318,829	340,069	340,069	340,069	340,069
2019				292,331	304,468	299,680	299,680	299,680
2020					280,246	277,852	291,250	291,250
2021						253,231	259,186	269,000
2022							235,458	239,384
2023								216,191

Step 2: Calculate the Annual Rates of Growth Based on the Table Above.

	2014	2015	2016	2017	2018	2019	2020	2021
2015	2%	11%	11%	11%	11%	11%	11%	11%
2016	-7%	-7%	-16%	-16%	-16%	-16%	-16%	-16%
2017		-5%	-3%	-4%	-4%	-4%	-4%	-4%
2018			-8%	-7%	-1%	-1%	-1%	-1%
2019				-8%	-10%	-12%	-12%	-12%
2020					-8%	-7%	-3%	-3%
2021						-9%	-11%	-8%
2022							-9%	-11%
								-10%

The first estimates (known as 'maturity 1', or M1, estimates) are shown in brown. The second estimates of the annual percentage change are shown blue. Note that the first estimate of the annual percentage change between 2014 and 2015 is not shown on the diagram, as it would have been in the column '2013' had this been included in the analysis.

Step 3: calculate the summary metrics using the layout in the table below.
The table shows the analysis based on the 1-year ahead 'forecasts' (that is estimates based on the indicator data). This involves lining up the blue growth rates from step 3. The 'Latest' (shown in grey) relates to estimates from the most recent period 9ass per the table in step 2).

1- year ahead 'forecasts'

	M1	Latest	Revision	sq revision
2015	2%	11%	9.0%	0.80%
2016	-7%	-16%	-9.3%	0.87%
2017	-3%	-4%	-0.7%	0.00%
2018	-7%	-1%	6.2%	0.38%
2019	-10%	-12%	-1.4%	0.02%
2020	-7%	-3%	4.5%	0.20%
2021	-11%	-8%	3.4%	0.11%
		Bias	1.7%	
		RMSE	5.8%	
Avg abs growth		7.8%		
RMSE/ avg abs growth		75%		

The column 'Revisions' is the Latest minus the M1 (maturity 1) estimates of growth. The final column squares these revisions.

The Root Mean Square Error (RSME) is the square root of the average of the squared revisions. It provides an estimate of the average revisions over the years considered.

The Average absolute growth is the average of the absolute values of the 'Latest' column.

The RMSE/the average abs growth provides a metric for the size of the revisions compared to the growth rates themselves. This is the key metric in the analysis. As a rule of thumb, a value <10 percent would signify that revisions are relatively small compared to the growth rates.

The 'bias' is simply the average of the revisions in the third column. It signifies if the revisions tend to be positive or negative. A bias close to zero is desirable.

A similar analysis can be undertaken for the 'forecasts' 2 years ahead, ass shown below:
 2- year ahead 'forecasts'

	M1	Latest	Revision	sq revision
2016	-7%	-16%	-9%	0.76%
2017	-5%	-4%	1%	0.01%
2018	-8%	-1%	6%	0.40%
2019	-8%	-12%	-4%	0.13%
2020	-8%	-3%	5%	0.26%
2021	-9%	-8%	1%	0.01%

Bias		0.2%
RMSE		5.1%
Avg abs growth	6.2%	3.7%
RMSE/ avg abs growth	83%	

Appendix III. Data Sources for Supply and Use Tables

Component of SUT	Sources
Domestic Output	Data from NAS survey, and VAT/CIT tax system, plus existing estimates based on GDP-P.
Trade/transport margins	Data from NAS survey for broad product groups
Imports of goods	Eurotrace data based on HS 8-digit headings
Imports of services	Balance of Payments Statistics (coded to EBOPS)
Taxes on products	
VAT	Total non-dedicational VAT, based on government revenue statement
Trade taxes	Customs data
Excise taxes	Government revenues statement
Subsidies on products	Government expenditure account
Intermediate demand (by product)	Broad percentages of intermediate consumption by activity derived of the NAS survey allocated to products. May also borrow from SUTs for nearby countries (GRE, VCT, BAR, ATG, and LCA)
Gross fixed capital formation	
Changes in inventories	May be possible to lse molded elates based on imports.
Acquisition less disposal of valuables	Eurotrace data based on HS 8-digit headings
Final expenditure of General Government	Government accounts
Final expenditure of Non-profit organizations serving households	Data from NAS survey, and VAT/CIT tax system, plus existing estimates based on GDP-P.
Final expenditure of Households	Household Budget Surrey (2019/19) price and volume updated
Exports of goods	Eurotrace data based on HS 8-digit headings
Exports of services	Balance of Payments Statistics (coded to EBOPS)

Appendix IV. Proposed Dimensions of Supply and Use Tables for 2024

Potential Product and Activities for Supply and Use Tables for Saint Kitts and Nevis

No.	Code	Product Description	No.	Code	Industry Description
1	A010	Crops	1	010	Growing of crops (011, 012 and 013)
2	A014	Live animals and animal products (excluding meat)	2	014	Raising of livestock (including hunting and trapping)
3	A021	Logs and other forestry products	3	02	Forestry and logging
4	A031	Fish and other fishing products	4	03	Fishing
5	B061	Crude petroleum	5	061	Extraction of crude petroleum
6	B062	Natural gas	6	062	Extraction of natural gas
7	B081	Quarrying products	7	081	Quarrying
8	B089	Other mining	8	089	Other mining
9	C011	Meat and meat products	10	101-102	Processing and preserving of meat and fish
10	C020	Processed fish			
11	C030	Processed fruit and vegetables	11	103-104	Processing of fruit and vegetables, and edible oils
12	C040	Edible oils and fats			
13	C050	Dairy products	12	105	Manufacture of dairy products
14	C068	Grain mill and starch products and animal feed	13	106&108	Manufacture of grain mill products and animal feeds
15	C071	Bakery products	14	1071	Manufacture of bakery products
16	C079	Other food products n.e.c.	15	1079	Manufacture of other food products
17	C111	Alcoholic beverages	16	1101-03	Manufacture of alcoholic beverages
18	C114	Non-alcoholic beverages	17	1104	Manufacture of non-alcoholic beverages
19	C120	Tobacco products	18	12	Manufacture of tobacco products
20	C130	Textiles, wearing apparel and leather products	19	13-15	Manufacture of textiles, wearing apparel and leather products
21	C160	Cork, wood and straw products	20	16	Manufacture of products of cork, wood and straw
22	C170	Paper and paper products	21	17	Manufacture of paper and paper products
23	C180	Printed and recorded media	22	18	Printing and reproduction of recorded media
24	C191	Liquified natural gas	23	19	Manufacture of coke and refined petroleum products
25	C192	Other petroleum products			
26	C201	Petrochemicals	24	201	Manufacture of Petrochemicals
27	C202	Fertilizer, nitrogen, and agrochemical products	25	202	Manufacture of other chemical products
28	C203	Paint, varnishes and similar coatings, printing ink			
29	C204	Soap and detergents, cleaning and polishing preparations, perfumes, and toilet preparations			
30	C205	Other chemical products			

No.	Code	Product Description	No.	Code	Industry Description
31	C210	Pharmaceuticals, medicinal and botanical products	26	21	Manufacture of pharmaceuticals, medicinal chemical, and botanical products
32	C220	Rubber and plastic products	27	22	Manufacture of rubber and plastics products
33	C231	Glass and glass products	28	2310	Manufacture of glass and glass products
34	C232	Bricks, tiles, and other ceramic products	29	2391	Manufacture of refractory products
35	C233	Cement, lime, and plaster	30	2394	Manufacture of cement, lime, and plaster
36	C234	Articles of concrete, cement, and plaster	31	2399	Manufacture of other non-metallic mineral products
37	C235	Other non-metallic products n.e.c.			
38	C240	Basic metals	32	24-25	Manufacture of basic and fabricated metals
39	C250	Fabricated and other metal products			
40	C260	Computer, electronic and optical products	33	26-28	Manufacture of machinery and equipment
41	C270	Electrical equipment			
42	C280	Machinery and equipment n.e.c.			
43	C291	Motor vehicles/cycles			
44	C292	Motor vehicle/cycle supplies and parts	34	29-30	Manufacture of transport equipment
45	C301	Boats and other transport equipment and supplies/parts			
46	C310	Furniture	35	31	Manufacture of furniture
47	C321	Other manufacturing	36	32	Other manufacturing
48	C330	Repair and installation of machinery and equipment	37	33	Repair and installation of machinery and equipment
49	D351	Electricity supply	38	351	Electric power generation, transmission, and distribution
50	E361	Water supply via pipeline	39	352	Distribution of gaseous fuels through mains
51	E362	Water supply trucked	40	36-37	Water collection, treatment and supply, and sewerage
52	E370	Sewerage			
53	E380	Waste collection, treatment, and disposal activities; materials recovery	41	38-39	Waste collection, treatment, and disposal activities; materials recovery
54	F410	Construction	42	41	Construction
55	G451	Sale of motor vehicles and motorcycles	43	45	Sales and repair of motor vehicles and motorcycles
56	G452	Repairs of motor vehicles and motorcycles	44	46	Wholesale trade
57	G460	Wholesale and retail trade	45	471	Other retail trade
58	H491	Passenger transport by road	46	473	Distribution of refined petroleum products
59	H492	Freight transport by road	47	4922	Passenger transport by road
60	H501	Water passenger transport	48	4923	Freight transport by road
61	H502	Water freight transport	49	50	Water transport
62	H511	Air passenger transport	50	51	Air transport

No.	Code	Product Description	No.	Code	Industry Description
63	H512	Air freight transport	51	521	Warehousing and storage
64	H521	Warehousing and storage	52	5222	Service activities incidental to water transportation
65	H523	Seaport services	53	5223	Service activities incidental to air transportation
66	H524	Airport services	54	5224	Other transport support services
67	H525	Cargo handling and other transport support services	55	531	Postal activities
68	H531	Postal services	56	532	Courier activities
69	H532	Courier services	57	551	Hotels and resorts
70	I55	Accommodation services	58	552	Other accommodation services
71	I56	Food and beverage services	59	561	Food catering services (predominantly)
72	J58	Books, newspapers and other published products and software	60	562	Beverage catering services (predominantly)
73	J590	Audio-visual production and distribution	61	58	Publishing activities
74	J601	Radio and TV broadcasting	62	59	Audio-visual production and distribution
75	J602	Subscriber cable TV services	63	60	Broadcasting and programming activities
76	J61	Telecommunication and internet services	64	61	Telecommunications
77	J62	Computer services	65	62	Computer programming, consultancy, and related activities
78	J63	Information service activities	66	63	Information services
79	K641	Monetary authority and financial supervision	67	6411	Central Bank of Trinidad and Tobago
80	K642	FISIM on loans and deposits	68	6412	Banks (FISIM)
81	K643	Explicit financial charges and fees	69	6419	Banks (non-FISIM)
82	K651	Life Insurance services	70	65	Insurance services, pension funds
83	K652	Non-life Insurance and pension management services			
84	K653	Reinsurance services			
85	K661	Other financial services	71	66	Other financial and insurance services
86	K662	Insurance agents and brokers			
87	L681	Imputed rents /OOD	72	6811	Owner-occupied dwellings
88	L682	Actual rents on rented dwellings	73	6812	Rented dwellings
89	L683	Actual rents on commercial property	74	6813	Commercial property rentals
90	L684	Real estate agents and property managers	75	6820	Real estate activities on a fee or contract basis
91	M691	Legal services	76	69	Legal and accounting services
92	M692	Accounting and auditing services			
93	M700	Business and management consultancies	77	70	Activities of head offices; management consultancy activities
94	M710	Architecture, engineering and technical	78	71	Architecture and engineering activities; technical testing and analysis

No.	Code	Product Description	No.	Code	Industry Description
95	M730	Advertising services and market research	79	73	Advertising and market research
96	M724	Other professional, scientific, research and technical services	80	72&74	Other professional, scientific, research and technical activities
97	M750	Veterinary services	81	75	Veterinary activities
98	N771	Renting of motor vehicles	82	77	Renting and leasing of motor vehicles, machinery and equipment, and personal and households
99	N772	Renting of machinery and equipment, personal and household goods			
100	N791	Travel agent services	83	791	Travel agency services
101	N792	Tour operator services	84	792	Tour operator and other reservation service activities
102	N800	Security and investigation activities	85	80	Security and investigation activities
103	N810	Building cleaning and landscaping activities	86	81	Services to buildings and landscape activities
104	N820	Other business and employment support services	87	78&82	Office administrative and support activities
105	O84	Public administration and defense; social security	88	84	Public administration and defense; social security
106	P851	Pre-primary/primary education Private sector	89	851	Pre-primary/primary education
107	P852	Pre-primary/primary education public sector			
108	P853	Secondary general, technical, and vocational education Private	90	852	Secondary general, technical, and vocational education
109	P854	Secondary general, technical, and vocational education Public			
110	P855	Tertiary education Private	91	853	Higher education
111	P856	Tertiary education Public			
112	P857	Private tutoring and other education n.e.c.	92	854	Other education
113	Q861	Human health services Private	93	86	Human health services
114	Q862	Human health services Public			
115	Q871	Social work activities Private	94	878	Social work activities
116	Q872	Social work activities Public			
117	R900	Creative arts and entertainment	95	90	Creative, arts and entertainment activities
118	R910	Libraries, museums, historical sites	96	91	Libraries, archives, museums and other cultural activities
119	R920	Gambling and betting	97	92	Gambling and betting activities
120	R930	Sports clubs, gyms and other activities	98	93	Sports activities and amusement and recreation activities
121	S940	Membership organizations	99	94	Activities of membership organizations
122	S950	Repair of other personal and household goods	100	95	Repair of computers and personal and household goods
123	S961	Washing and (dry-) cleaning of textile and fur products	101	9601	Washing and (dry-) cleaning of textile and fur products

No.	Code	Product Description	No.	Code	Industry Description
124	S962	Hairdressing and other beauty treatment	102	9602	Hairdressing and other beauty treatment
125	S963	Funeral and related activities	103	9603	Funeral and related activities
126	S964	Other personal service activities n.e.c.	104	9609	Other personal service activities n.e.c.
127	T970	Activities of households as employers of domestic personnel	105	97	Activities of households as employers of domestic personnel