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**DATA DISSEMINATION PERFORMANCE IN CARICOM**

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### **Introduction**

The producers of macro-economic and financial data in the CARICOM region include National Statistical Offices, Central Banks and Finance Ministries. This paper is primarily concerned with measuring the performance of these organizations in the area of data dissemination. More specifically, it examines the recent performance of these organizations in supplying, on a sustained basis, the kind of data that would enable the decision makers, investors, econometricians and other interested parties to evaluate short-run macroeconomic policy and performance. The compression of decision making horizons means that the issue of timeliness will also form an important part of our evaluation. Our analysis differs from other studies such as Morgenstern (1950) and Griliches (1986) in that we are primarily concerned with the "output performance" of statistical organizations in the region rather than the conceptual or methodological problems of the data produced by such organizations. Our focus on data dissemination performance leads us to address the following issues

- **Data Coverage, Periodicity and Timelines:** Are the region's statistical organizations providing data that is; relevant and comprehensive, at the appropriate periodicity and are they disseminating this data in a timely enough manner so as to justify its use in economic decision making?
- **Data Quality:** Does the received data carry sufficient information so as to warrant its use in macroeconomic decision making?
- **Data Integrity and Confidence Building:** Are statistical agencies operating in an manner and putting in they putting in place the kind of measures that will engender the confidence of their users?

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The paper is divided into three major sections. The next sections outlines the basic approach that will be used to assess data dissemination performance. An appropriate set of benchmarks are developed which draw on a number of sources including; the Data Dissemination Standards of the IMF, the macro-economic policy model developed for CARICOM type economies developed by Watson and Clarke(1991) and the statistical compilations guidelines and recommendations issued by international agencies such as the United Nations, IMF and the ILO. Section 3 examines CARICOM data dissemination performance against the various benchmarks. The final section of the paper summarizes the results and makes suggestions about how the identified deficiencies may be addressed.

### **Methodology**

#### **Data Coverage, Periodicity and Timeliness**

In assessing the "output" performance of statistical organizations a legitimate area of inquiry is the issue of the relevance of this output. Macro-economic data sets should be configured to allow interested parties to make informed judgments about economic developments. The identification of a relevant set of target indicators is complicated by the fact that significant differences exist among CARICOM economies. At the same time, the task of identifying such indicators is not insurmountable. CARICOM economies share a number of common such as small size, openness and relatively undiversified "mono-crop" production infrastructures.

In establishing benchmarks for the logical starting point is the Data Dissemination Standards recently established of the IMF: These standards have their genesis in the aftermath of the Mexican financial crisis of 1994-1995. The concern was expressed that the impact of the crisis could have been averted, or at least its impact lessened, if investors and other decision makers had timely access to a core of essential macro-economic indicators. It was felt that the ready availability of these indicators could minimize the spill-over effect of economic shocks and other destabilizing influences. Following on this, the IMF Executive Board of Governors was asked to prescribe a set of

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standards to govern data dissemination practice that would aid in the formulation of sound policies and the improved functioning of capital markets.

The outcome was the development of a two tiered system;

- The General Data Dissemination Standard (GDSS) to which all members would subscribe
- The Special Data Dissemination Standard (SDDS) which is more demanding and designed for countries either participating or aspiring to participate in international capital markets

In this regard, it was decided that SDDS was an appropriate starting point for coming up with a set of benchmarks for assessing the current performance of CARICOM data providers in the areas of coverage, periodicity and timelines. Although it was felt that the region was likely to fall short in many areas, the adoption of this more rigorous standard was justified on the basis that some of the regions policy makers were of the opinion that the attainment of the SDDS was a worthy short run objective. It was felt that the attainment of the SDDS could convey tangible benefits to the region including the possibility of an lowering of the barriers to accessing international capital markets. Moreover, it was also hoped that the attainment of SDDS would send a strong signal that the region has attained high standards in the area of economic policy management. Moreover, the thrust to attain this standards is likely to alert policy makers and planners to the tangible benefits that can accrue from efficient statistical systems. This study provides valuable information on the feasibility of such an undertaking

The SDDS has been framed in such a manner so as to allow countries to easily adopt them to their own circumstances. In adopting these standards to the special conditions of CARICOM states, we are guided by the views of many prominent regional policy makers, economists and policy makers. We have also incorporated the work done in the region on the issue of economic convergence. Finally, extensive use is made of the modeling framework provided by Watson and Clarke (1995). These researchers have set up a prototype econometric model designed to support policy making in the typical CARICOM economy. This model proposes a blocking scheme, behavioral equations and

maps out the key macro-economic variables that should be monitored in CARICOM economies. The structure of the prototype model is provided in Appendix 1

Table 1 presents a basic template for evaluating the performance of regional data producers with respect to coverage, periodicity and timeliness. The economy is divided into four major blocks; the Real Sector, the Fiscal Sector, the Financial Sector and the External Sector.

For each of these blocks, a set of coverage benchmarks are established. These take the form of major aggregates, critical components and required component detail. The last two categories are especially important since they allow for the easy identification of the rigor of the compilation process. So for example, while many CARICOM countries can meet coverage benchmarks which prescribe expenditure on GDP by major expenditure category with critical components identified for private consumption and investment, closer examination reveals that these aggregates were obtained through the use of residuals. Thus, based on the component detail benchmark, this sort of data on private expenditure will not be as highly regarded as expenditure data that had been obtained through the consolidation of low level data obtained from surveys.

The templates also establish benchmarks for the periodicity and timeliness of the output. In this context *periodicity* refers to the frequency of the compilation of the data while *timeliness* refers to the speed of the dissemination of the data or the lapse of time between a reference period and the actual dissemination of the data. It must also be noted that dissemination means for our purposes, the provision of access to statistics by the *general public* in a *structured manner*. This may include one or more of the following

- Traditional hard copy publication
- An announcement of the availability of the data on request
- Electronic data products (Diskettes and CD ROMs)
- The provision of voice mail messages and Fax services.
- Internet WWW site or Electronic Bulletin Board

Table 1: Benchmarks for Data Coverage, Periodicity and Timeliness

Data category	Main Aggregate	Critical Component	Required Component Detail	Periodicity	Timeliness (months)
<b>Real Sector</b>					
National Accounts	GDP at current and constant prices	Private Consumption Investment (GDPI)	By type of Good or major expenditure category	Q	3
			By Institutional Sector (public/private)	Q	3
			By type of Good	Q	3
Production	Disposable National Income	Total Value Added by industrial Sector (constant and current prices)	By industrial sector main ISIC (rev 2 or 3) sections	Q	3
			By institutional sectors	Q	3
			By institutional sector	Q	3
Labour Market	Labour force	Employed unemployed/unemployment rate (ILO)	By industrial sector Main ISIC (rev 2 or 3) sections as relevant	Q/M	3/1
			Major expenditure categories (ILO)	M/Q	1
Prices	Earnings/Hours Worked RP/CPI	Employed unemployed/unemployment rate (ILO)	By industrial sector Main ISIC (rev 2 or 3) sections	Q	3
			By industrial sector Main ISIC (rev 2 or 3) sections	M	1
			By industrial sector Main ISIC (rev 2 or 3) sections	Q	3
<b>Fiscal Sector</b>					
Central Government Fiscal Operations	Revenue/Expenditure Surplus Deficit		Tax/Non Tax Revenue Grants Financing	M	1
<b>Government Debt</b>					
Government Debt	Domestic and foreign		Currency Breakdown	Q	3
	Debt Service Projections		Maturity Breakdown Interest and amortization on medium and long term debt	A	3
<b>Monetary and Financial Sector</b>					
Banking System	Money aggregates	Narrow money Quasi Money		M	1
Central Bank	Domestic Credit External Position	Public/Private Public/Private Public/Private Public/Private		M	1
				M	1
				M	0.5
				M	0.5
<b>Interest Rates</b>					
Interest Rates	Government Securities Prime Lending Rates/Discount Rates			D	1 Day for request Monthly publication
Stock market	Representative deposit and lending rates Share price Index/Volume and value		as relevant	M	1
				D	* Monthly publication
<b>External Sector</b>					
BOP	Goods and Services Income flows Net current transfers Capital and Financial Account			Q	3
				Q	3
				Q	3
International Reserves Merchandise Trade	Gross Official Reserves (SUS) Exports/Imports		Composition of assets and liabilities	M	1
			By SITC section	M	1.5
			By Economic end use	M	1.5
Exchange Rates	Export/Import Price Indices Exchange Rates		By Country of origin/destination	Q	3
			By main SITC section	Q	3
			Spot 3 and 6 Month forward Sales and Purchases of foreign currency	D	1 Day for requests Monthly public

In this study the periodicity benchmarks have strictly followed the SDDS recommendations. On the other hand, the benchmarks for timeliness have been relaxed to reflect a weaker enforcement environment.

## Data Quality Benchmarks

Our focus in the last section was on the ability of CARICOM data providers to deliver a specified group of target indicators, at the optimum frequencies for decision making in a timely manner. It is also important to develop benchmarks for assessing the usefulness of the output. Policy makers, investors and other interested parties need the assurance that the data they are using is reliable, that compilation methodologies are reflective of reality and follow standard international guidelines. Additionally, the users of sub-annual data may typically require that such data be seasonally adjusted before it can prove useful in short run surveillance.

**Revision Analysis** - The analysis of the frequency and magnitude and direction of revisions is probably the most precise tool for capturing information about the information content and reliability of published macroeconomic aggregates. Sound decision making requires that the initial estimates of macro economic indicators should not give a misleading impression about what has just occurred in the economy. Revision analysis can also disclose the impact of compilation problems such as poor response rates, the use of inappropriate imputation techniques, changes in methodology, too heavy reliance on residuals etc. of the kind documented by Marshall (1991). However, formal revision analysis serves to put all these problems in context and the impact of these problems can be readily quantified.

Unfortunately revision analysis cannot be readily applied to all macro aggregates in all circumstances. Revision analysis makes the assumption that the statistical organization is involved in a continuous search for the best available estimate. Unfortunately the revision policies of different statistical organizations may not be in line with this tradition. In some cases the compiling agency may choose not to revise a given series even though there may be good reasons to do so. So for example, in many countries it is traditional that the data on inflation be not revised. Moreover, the true revision performance may be masked by the practice of withholding or not publishing the revised data (or even the data series) for several periods, a practice not unknown in the CARICOM region.

**Other Data Quality Benchmarks:** It is also important to also address the issue of data quality from the input side. In this regards, the current compilation practices of regional statistics producers were subjected to a battery of tests that sought to determine if "good statistical practice" had been used in the compilation of the data. These take the form of a simple instrument or check-list which asks a number of simple question about the compilation of the main aggregates. The questions are derived by examining a number of guidelines issued by international statistical organizations. We also examined the methodologies actually in place at a number of leading edge statistical organization including Statistics Canada, US Bureau of Labour Statistics and the UK Central Statistical Office.

No attempt has been made to weigh the significance of the items or to standardize scores. Moreover, an attempt has been made to select a very basic sub-set of items that have been deemed appropriate to the circumstance on the ground in CARICOM. It this regard the "good statistical practice" check list should be viewed as the ideal type for any statistical office.



Table 2: "Good Statistical Practice" Check List

Aggregate	Test Item	Maximum Score
<b>Real Sector</b> <b>National Accounts</b>	Compilation Based on SNA 1993 or SNA 1968?	1
	As least two independent methods used in the compilation of accounts? (Income, Expenditure, Output)	1
	Input-output tables are an integral part of compilation process?	1
	Capital Stock Data - Publication quality annual/quarterly series available (1), Benchmark data no more than 5-7 yrs old (0.5)	1
	Official sub annual (quarterly) series Available?	1
	Sub annual data are seasonally adjusted?	1
	Industrial classification follows ISIC Rev 2 or 3?	1
	Is the base year for constant price estimates less than - 5 TO 7 yrs (1), 8 to 12 yrs(.5) or more than 13 (0) old?	1
	"Double Deflation" consistently used in the estimation of constant price Value Added in the relevant sectors (e.g. Agriculture, Mining, Manufacturing)	1
	<b>Index of Production</b>	Is the base year for the index less than - 5 TO 7 yrs (1), 8 to 12 yrs(0.5) or more than 13 (0) old?
Industrial classification follows ISIC Rev 2 or 3?		1
Are these indicators seasonally adjusted?		1
<b>Other Production Indicators</b>  <b>Labour Market Labour Force</b>	Available indicators cover major economic activity?	1
	Data are Seasonally adjusted?	1
	Based on Quarterly CPS survey?	1
	Comparable data also available from unemployment insurance records or payroll survey?	1
	Compilation follows ILO current recommendations?	1
	Regular publication of sampling errors ? Sub-annual data are Seasonally adjusted?	1
<b>Retail Price Index</b>	Based on HBS conducted in the lasts 5 -7 years ?	1
	Compilation broadly follows ILO Current International Recommendations?	1
	Comprehensive coverage of both major urban and rural centers ?	1
<b>Fiscal Statistics</b> <b>Central Government Fiscal Operations</b>	Compiled in broad accordance with IMF's Manual on Government Finance Statistics?	1
<b>Monetary and Financial Statistics</b> <b>Monetary Aggregates</b>	Compiled in accordance with IMF's Manual on Financial Statistics?	1
	Sub annual data are Seasonally Adjusted?	1
<b>External Sector</b> <b>The Balance of Payments</b>  <b>International Trade</b>	Compilation in accordance with IMF's Fifth BOP manual?	1
	Ratio of Net Errors and Omission to Total Trade flows < 5%	1
	Compilation follows International Trade Concepts and Definitions Unit Value/Price Indices Available?	1

## Data Integrity and Confidence

Finally, the users of statistical data must have confidence in the efficiency and level of professionalism of the organizations responsible for disseminating statistics. Unless a high level of confidence exists in the terms and conditions under which the data is being provided, users will be reluctant to use it to as basis for decision making. In this regard, users inform judgments about the integrity and competence of statistical organizations by reference to the presence (or absence) of common user confidence building measures. These may include basic measures such as; the presence of modern statistical legislation that sets the framework for statistical compilation, the availability of that clearly written documentation, the adherence to publication deadlines, advance calendars to govern the release of data, the provision of analytical commentary to explain the significance of the numbers and so on. Leading statistical agencies may go much further implementing measures such as the strict embargoing of data to insure the simultaneous release of the data to all interested parties and the provision of forecasts, simulations and projections to meet the needs of the users. The instrument below presents a number of proxy measures that can be used for judging degree to which the data dissemination process will engender the confidence of users.

**Table 3: Data Integrity and Confidence Building Measures**

Item	Explanation	Maximum Score
<b>General Integrity Benchmarks</b>		
Are the data compiled under the aegis of modern Statistical Legislation or Legislation that facilitates the effective collection of data?	Such legislation must include provisions to insure the confidentiality of individual responses (1) Insure that the compiling agency is administratively independent of the Central Government (1)	2
Does the compiling agency provide information to the public about revisions practices?		1
Does it give advance notices about changes in methodologies?		1
<b>Access to the Public</b>		
Does the compiling agency provide advance notification of data release?	Advance release calendars (1) Publications schedule/subscription service (1)	2
Does the primary compiling agency attempt to simultaneously release data to all interested parties	This may include or press/news releases or FAX or Telephone notification	1
<b>Quality of Documentation</b>		
Does the compiler provides up to date documentation covering Concepts, Sources and Methods?		1
Does the Compiler present explanatory notes covering methodology and data sources in each release?		1
The primary compiler regularly provides its own analytical commentary. (this must be clearly distinguished from ministerial commentary)	High Standard: Comprehensive attempts to draw on developments in other economic sectors and analyze trends (1) Standard: Agency attempts to provide basic information but no attempt is made to put developments in context (0.5)	1
Does the compiler provide enough detail in the release to support the cross checking of the information provided		1

## Major Findings

### Coverage, Periodicity and Timeliness

#### Real Sector

Table 6 summarizes the results for the real sector, the details of each countries performance are presented in Appendix 2. Table 6 lists the various data categories and for each country in the region, reveals the extent to which the country is meeting the benchmark for coverage [C], periodicity [P] and timeliness [T]. With respect to the coverage benchmark, it was felt that a simple "yes/no" dichotomy to the question of data coverage was insufficient and would not convey a lot information about the existing coverage. Thus, an ordinal rating system was used to identify the significant differences in the coverage performance of CARICOM in relation to the ideal level of coverage identified in the last section. This grading system is given as follows:

1	Full coverage at the aggregate, critical component and component detail level
X	Meets coverage benchmarks at the aggregate and critical component level in all the areas identified but not for all the critical components
+	Meets benchmarks at the aggregate and/or critical component level in some significant areas
*	Meets coverage benchmarks only for a few of the aggregate and critical component level and for none of the component details
0	No coverage

This rating system was especially useful in areas like the National Accounts where there were several aggregates, critical components and component detail benchmarks and the performance of the sample varied widely against these benchmarks.

Table 6 also shows the actual periodicity in each data category as well as the time lag for data dissemination as *reported* by the primary agency responsible for compiling the data. The measurement of "timeliness" output was complicated by the fact that reported on time performance may differ significantly from *actual* on time performance as judged by the of the timeliness of published output or submissions to regional or international agencies. In this context, we have defined dissemination to include the disclosure of provisional data on request but it is expected that more final data will be made available in a more concrete format within some "reasonable" time period.

The use of the former measure of timeliness in the CARICOM context probably present a very optimistic picture of the statistical agencies on-time performance and is probably more reflective of the desired as opposed to actual timeliness. However, the measurement of the actual dissemination lag the also has its own problems. For example, many data elements may be available on request well before they are published or are submitted to regional or international agencies. In some areas like the national accounts, the lag between availability on request and the official publication of the data may extend for an unacceptably long period of time (several years). During this time period of time the data are considered to be provisional. This practice plays havoc with any objective measure of timeliness. The measurement of the actual on-time performance of CARICOM data producers is further complicated by the fact that many of them have been driven by high costs to discontinue hard-copy. Because of these complications, this study relies primarily on the on- time performance reported to us by the statistical organizations. However, where there is sufficient evidence to suggest that these estimates were too optimistic they have been adjusted in the light of actual experience.

Table 6 reveals serious deficiencies in the coverage, periodicity and timeliness of real sector data in CARICOM economies. This weakness was most evident in the National Accounts. Indeed, none of the countries in the region were able to meet the coverage benchmarks at all the required levels i.e., aggregate, critical component and component detail. The area of greatest weakness was on the aggregate expenditure side, where only six of the countries were able to supply data on aggregate expenditure at constant prices. Another disturbing development has been the fact that in recent times the dissemination of the Jamaica and Trinidad data on real

Table 4: CARICOM Performance Against Coverage (C), Periodicity (P) and Timeliness (T) Benchmarks

Country Category	National Accounts			Production						Labour Market						Prices						
				Production Index			Key Production Indicators			Labour Force			Wages/Earnings			RPI/CPI			Producer or/ Wholesale Prices			
	C	P (a)	T <3mt h	C	P (a)	T <3mt h	C	P (M)	T <1mt h	C	P (M)	T <1mt h	C	P (a)	T <3mt h	C	P (a)	T <3mt h	C	P (M)	T <1mt h	
Antigua	*	A	6	0	0	0	1	M	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Bahamas	*	A	6	0	0	0	1	M	1	0	0	0	0	0	0	1	M	0	0	0	0	0
Barbados	+	A	3	X	Q	0	1	M	1	1	Q	3	0	0	0	X	M	1	0	0	0	0
Belize	+	A	4.5	+	Q	0	1	M	1	1	SA	3	0	0	0	1	M	1	0	0	0	0
Dominica	+	A	4.5	0	0	0	1	M	1	0	0	0	0	0	0	1	M	1	0	0	0	0
Grenada	+	A	4.5	0	0	0	1	M	1	0	0	0	0	0	0	1	M	1	0	0	0	0
Guyana	*	A	7	0	0	0	1	M	2	0	0	0	0	0	0	X	M	0	0	0	0	0
Jamaica	X	A	3	X	Q	3-4	1	M	1	1	Q	3	1	1	3	1	M	1	0	0	0	0
Montserrat	+	A	6	0	0	0	1	M	1	0	0	0	0	0	0	1	M	1	0	0	0	0
St. Kitts	+	A	4.5	0	0	0	1	M	1	0	0	0	0	0	0	1	M	1	0	0	0	0
St. Lucia	+	A	4.5	0	0	0	1	M	1	0	0	0	0	0	0	1	M	1	0	0	0	0
St. Vincent	+	A	4.5	0	0	0	1	M	1	0	0	0	0	0	0	1	M	1	0	0	0	0
Trinidad	+	A	3	1	Q	3-4	1	M	1	1	Q	3	1	1	6	1	M	1	X	Q	1	1

Key for coverage: 1 - Full coverage at the aggregate, critical component and component detail level

X - Meets coverage benchmarks at the aggregate and critical component level in all the areas identified but not for all the critical components

+

\* - Meets coverage benchmarks only for a few of the aggregate and critical component level and for none of the component details

0 - No coverage

expenditure has become sporadic and has not been available in the routine publications. These data are only been available on request from the compiling agency and are considered highly provisional. At the component detail level only Jamaica was able to meet the requirement to supply private consumption data by type of good or expenditure category.

The weakness of the expenditure side of the National Income estimates was also reflected in the data on Investments (GDCF). While most of the sample could supply a breakdown for investment by type of good, none could supply estimates of investment disaggregated by institutional sector. Given the emphasis on the output approach as could be expected in the compilation of national accounts in the region, most of the sample met the benchmarks to supply this data disaggregated by industrial sector at both current and constant prices.

Thus, with respect to the coverage benchmarks for the national accounts we were able to partition the sample into three (3) major groups. This is illustrated in Figure 1 below.

**Figure 1: Coverage of the National Accounts**

Country	Aggregate	Critical Component	Component Detail
Maximum	6	8	12
<b>Tier 1</b>			
Jamaica	6	8	8
Trinidad	6	8	4
<b>Tier 2</b>			
Barbados	3	4	1
Monterrat	3	4	2
Grenada	3	4	3
St. Lucia	4	6	4
<b>Tier 3</b>			
Guyana	3	3	0

In the first tier we have Jamaica and Trinidad which were meeting the coverage benchmarks at the aggregate and critical component level in all of the areas identified. However, they were not generally meeting the coverage benchmarks (less than 50%) at the

component detail level. The second tier in terms of coverage of comprised the bulk of the countries in the sample. This was a diverse group and these countries either not generally meeting coverage benchmarks at the aggregate level and critical component. Moreover, the coverage was almost totally deficient at the component detail level. Belize and Barbados are interesting examples of the coverage of National Accounts in second tier countries. In the case of Belize the coverage was very wide and it was meeting all six benchmarks specified at the aggregate level. However there was not much debt to the coverage of the national accounts and it was only meeting 2 of the critical components benchmarks. In contrast, the Barbados coverage was very narrow and confined mainly to Value Added by Industrial sector at current and constant prices. However, in these areas the Barbados coverage generally met the met the coverage requirements at the component detail level. The final tier contains those countries which are only meeting the coverage benchmarks for a few of the benchmarks at the aggregate and critical component levels but generally not at the component detail level

Table 6 also exposes the deficiencies in the National Accounts output with respect to periodicity and timeliness of the National Accounts output. None of the countries could meet the requirement for quarterly national accounts as they all compiled their national accounts on an annual basis. The timeliness of the data was also deficient as the median reporting lag for the sample was about 4-5 months form the end of the reference period for the data value added. The case of Trinidad is interesting, as the first published estimates of annual GDP are available two to three months *before* the end of the reference period. However, these initial estimates are more in the form of projections (see section 3) and the first firm estimates are typically available 4 to 5 months after the end of the reference period.

Most countries in the region did not report the range labour force and wages and earnings data prescribed. In contrast, the two bright spots were the coverage of the retail prices and production indicators. The coverage of this data was not only up to mark but it was found that the data generally met the periodicity and timeliness benchmarks.



Indeed many of the regions Central Banks have moved to address the deficiencies in the timeliness and periodicity of the National Accounts output by tapping this data. Some of these institutions have already had as much as ten years experience in the compilation of unofficial quarterly GDP series. These have generally followed the official estimates and adopted the value added approach.. However, in some countries like Trinidad and Tobago these data has been the source of some controversy especially with respects to its divergence form the initial official GDP estimates produced by the Trinidad & Tobago CSO. We have already examined one cause for some of this divergence i.e., that the initial CSO estimates are more in the form of projections. Corker and Francis (1996) have examined the performance of the two data sets over the last ten (10) years and have concluded that at the aggregate level the discrepancies between the two indices are statistically insignificant. Not withstanding the good tracking performance of its QGDP index, the CBTT has concluded that it needed to employ formal benchmarking techniques in the derivation of its quarterly indicators so that its quarterly data would more closely aligned the official estimates.

### **Fiscal Sector**

This block presents a much less bleak picture than the previous one. Table 7 shows the coverage, periodicity and timeliness of the fiscal sector output. Almost all the countries in the region can provide the required coverage of the Central Government Fiscal Operations at the aggregate and critical component level and can meet and many exceed the benchmarks periodicity and timeliness. The good performance of the Government Debt is largely reflective the efforts of international agencies like the Commonwealth Secretariat and UNCTAD along with the regional finance ministries and central banks in introducing computerized debt monitoring systems in the region. The major exception are the countries of the OECS region where the coverage of the domestic debt is generally weak. Indeed, the main problem in some countries (Trinidad and Jamaica) seems to be one of data surplus instead of data deficiency with different agencies; Central Bank, Ministry of Finance and so on producing sometimes conflicting estimates.

**Table 5: CARICOM Performance against Coverage (C), Periodicity (P) and Timeliness (T) Benchmarks; Fiscal Sector**

Category Country	Central Government Fiscal Operations			Government Debt		
	C	P (M)	T (1 mth)	C	P (Q)	T (3 mths)
Antigua	X	M	1	X	A	1-3
Bahamas	1	M	1	1	Q	1-3
Barbados	1	M	1	1	Q	1-3
Belize	1	M	1	X	A	1-3
Dominica	1	M	1	X	A	1-3
Grenada	1	M	1	X	A	1-3
Guyana	1	M	1	1	Q	1-3
Jamaica	1	M	1	1	Q	1-3
Monsterrat	X	M	1	X	A	1-3
St. Kitts	1	M	1	X	A	1-3
St. Lucia	1	M	1	X	A	1-3
St. Vincent	1	M	1	X	A	1-3
Trinidad	1	M	1	1	Q	1-3

### Financial Sector

Similarly the coverage of the financial sectors sector meets the benchmarks at the aggregate and critical component level for all countries in the survey. The main problem again is the timeliness of the output. The median reporting lag for data on the banking system is about 2 months largely on account of the tardy reporting of the commercial banks and non-banks. On the face of it, the problem does not appear to be of the same magnitude as in the other blocks. Unfortunately, this is one of the sectors where especially for those countries with liberalized financial systems where the horizon for decision making is extremely short, and attainment of the 2 week/monthly benchmark may be critical to effective macro economic policy management.

In the case of the interest rates, the institutions are able to supply the major policy rates or such as the prime interest rates the announced rates on loans and of deposits on a daily basis by special requests. Again, the data on actual rates such as the weighted average loan and deposit rates are typically only available on a quarterly basis with a 2 to 3 month lag. In general, the timeliness of financial sector statistics is much better than the real sector.

**Table 6: CARICOM Performance against Coverage (C), Periodicity (P) and Timeliness (T) Benchmarks; Financial Sector**

Category Country	Banking System			Central Bank			Interest Rates		
	C	P (M)	T (1 mth)	C	P (Q)	T (0.5 mths)	C	P (M)	T (1 mth)
Antigua	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Bahamas	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Barbados	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Belize	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Dominica	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Grenada	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Guyana	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Jamaica	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Monsterrat	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
St. Kitts	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
St. Lucia	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
St. Vincent	1	M	1-2	1	M	0.5-1	1	M/Q	1-2
Trinidad	1	M	1-2	1	M	0.5-1	1	M/Q	1-2

### External Sector

The framework for the analysis of external sector developments is set by the Balance of Payments. While the coverage tends to meet the benchmarks at aggregate and critical component level there are typically serious problems with respect the periodicity and timeliness of the BOP data. Most of the countries with the exception of the Bahamas, Trinidad and Jamaica compile the BOP on an annual basis and even this data appears with a considerable lag. In contrast, most countries were able to produce and international reserves and merchandise trade at the required frequencies and for the former, within the limits set for the timeliness of the dissemination.

The data on Gross Official Reserves are usually available at the required frequencies while the on time performance matches or may even exceed the timeliness benchmarks. In the case of external trade flows (export and imports) the problem was largely one of timeliness and only one country, Barbados, actually comes close to meeting the timeliness benchmark. More disturbing is the deficiency (or lack there of) in the coverage in Export/Import Price indices. Such indices including unit value had been calculated in the recent past by Jamaica and Trinidad and Tobago however within recent times these seems to be some reluctance to disclose this information to the general public.

**Table 7: CARICOM Performance against Coverage (C), Periodicity (P) and Timeliness (T) Benchmarks: External Sector**

Country	BOP			Gross Official Reserves			Trade		
	C	P (Q)	T (3 mths)	C	P (Q)	T (0.5 mths)	C	P (Q)	T (1 mths)
Antigua	1	A	3-4	1	M	0.5	1	M	6
Bahamas	1	Q	3-4	1	M	0.5	1	M	2
Barbados	1	A	3-4	1	M	0.5	1	M	1.5-2
Belize	1	A	3-4	1	M	0.5	1	M	4
Dominica	1	A	3-4	1	M	0.5	1	M	4
Grenada	1	A	3-4	1	M	0.5	1	M	4
Guyana	1	A	3-4	1	M	0.5	1	M	4
Jamaica	1	Q	3-4	1	M	0.5	1	M	2
Monsterrat	1	A	3-4	1	M	0.5	1	M	4
St. Kitts	1	A	3-4	1	M	0.5	1	M	4
St. Lucia	1	A	3-4	1	M	0.5	1	M	4
St. Vincent	1	A	3-4	1	M	0.5	1	M	4
Trinidad	1	Q	3-4	1	M	0.5	1	M	2-6

### Data Quality Assessment

#### Revision Performance

It was important to choose an area where revision policies were relative consistent across the various countries. Our examination of the published data revealed that the only the National Accounts and the Balance of Payments meet this requirement. Table 10 presents the results of our analysis of the revision performance for GDP at constant prices for CARICOM and the control country the United Kingdom.

The magnitude of the revisions is examined with a view to determining if the initial measurement of the indicator is biased. The use of an indicator prone to revision bias can contribute to errors in judgment on the part of policy makers and investors as are continually misinformed about the direction of economic developments. The accurate assessment of revision performance is requires the consistency of the data sources.

Table 8 CARICOM Revision Performance

	Reference Period	Number of Revisions	Number of Sign Reversals	Absolute Average Size of First Revision	Standard Error of First Revision	Mean Revision	Standard Deviation
Antigua	1990-1994	6	0	0.98	1.3961	0.28	1.3541
Bahamas	1990-1994						
Barbados	1990-1994	8	0	0.18	0.2872	0.11	0.3091
Belize	1990-1994	8	0	1.20	1.4353	0.49	1.2159
Dominica	1990-1994	5	0	0.38	0.3096	0.24	0.4037
Grenada	1990-1994	5	1	0.83	1.2420	-0.16	1.0761
Guyana	1990-1994	2	0	0.45	1.2728	0.80	1.2728
Jamaica	1990-1994	11	0	0.38	0.4193	0.24	0.3776
Monterrat	1990-1994						
St. Kitts	1990-1994	4	0	1.10	1.7000	-0.35	1.7000
St. Lucia	1990-1994	5	0	0.43	0.7371	0.10	1.0534
St. Vincent	1990-1994	7	0	0.70	0.9452	-0.47	1.3524
Trinidad	1990-1994	8	1	0.75	0.9764	-0.29	0.7080
UK	1990-1994	11	0	0.15	0.2449	-0.17	0.7404

### Other Data Quality Measures

#### Good Statistical Practice

Table 10 presents a summary of the CARICOM performance against the data quality proxies presented in Section 2. As could be expected, the weakest area was the National Accounts. Our previous analysis disclosed that the region's coverage of the national accounts was generally deficient and a cursory examination of Table 10 reveals also reveals serious short comings in the techniques and methods used to derive these data. Among the more serious of these deficiencies was the fact that the estimates were all one dimensional in the sense that that only *Value Added* was being directly estimated either through establishment surveys or administrative records. There was no independent estimation of national income or expenditure.

Table 9: CARICOM Performance Against Good Statistical Practice Check List

Data Category /Country	National Accounts	Production Index	Labour Force	RPI/CPI	Fiscal Statistics/ Debt	Financial Statistics	BOP	Trade	Total
Barbados	1.5	1.0	3.0	3.0	1.0	1.0	2.0	1.0	12.5
Jamaica	2.5	1.0	3.0	2.0	1.0	1.0	1.0	2.0	12.5
Trinidad	2.5	1.0	3.0	2.0	1.0	1.0	1.0	1.0	12.5
Dominica	1.5	0.0	0.0	3.0	1.0	1.0	2.0	1.0	11.5
St. Lucia	1.5	0.0	1.0	2.0	1.0	1.0	2.0	1.0	9.5
Belize	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	9.0
Grenada	1.0	0.0	0.0	2.0	1.0	1.0	2.0	1.0	8.0
St. Vincent	0.5	0.0	0.0	2.0	1.0	1.0	2.0	1.0	7.5
St. Kitts	0.5	0.0	0.0	2.0	1.0	1.0	2.0	1.0	7.5
Guyana	1.0	0.0	0.0	2.0	1.0	1.0	1.0	1.0	7.0
Monsterrat	0.5	0.0	0.0	2.0	1.0	1.0	1.0	1.0	6.5
Antigua	0.5	0.0	0.0	2.0	1.0	1.0	1.0	1.0	6.5
Bahamas	0.5	0.0	0.0	1.0	1.0	1.0	1.0	1.0	6.5

This over-reliance on a single approach to the estimation of the national accounting aggregates is even more worrying when we consider the fact that the regional compilers have all reported problems with very low response rates in the national establishment surveys which primary source of the data on value added.

Input-Output matrices are not only useful analytical constructs for understanding the structure and dynamics of economies but they are national accounts compilers with probably the best framework for quality control. The input-output framework brings together all the available information on outputs, inputs, income and expenditure. Thus they provide an ideal framework for deriving a consistent set of estimates of total value added with analyses into income and expenditure components. In many of the more statistically sophisticated countries it is common that this information be utilized to improve the quality of the initial estimates. So for example the UK Central Statistical Office basis its final revisions of national accounts on the input-output data while in the case of the Central Statistics Bureau of Norway the input-output coefficients are used to provide a consistency check on the consistency of quarterly estimates which have been derived mainly from the out put side.

In recent years only Jamaica have been able to put together working input-output matrices. However, weakness of the basic data collection and compilation methodologies

makes the integration of the input-output matrices into the routine production of national accounts in CARICOM impractical and time consuming.

Other weakness form a statistical practice point is the general lack of data on the size and disposition of the capital stock although benchmark data have become recently become available for 1991 for Trinidad. Additionally, for several countries, the base year for the constant price estimates are probably outdated. Good statistical practice would dictate that given of the relative stability the region has enjoyed in recent years, most countries should have re-based their constant price estimates to approximately 1990. Actually, the median constant price-base year for the region is 1984 and for three countries; Barbados, Antigua and Monsterrat the base year for the constant price estimates date back to the 1970s.

In the other performance of CARICOM statistics producers against the statistical practice benchmarks in the other areas of the real sector is generally mixed. While three of the countries produced quarterly production indices it was found that the vintage of the base years of these indices had probably began to affect their reliability. In contrast while only; Barbados, Jamaica and Trinidad produced the required data on the Labour force, this data was judged to be of high standard based on the fact that all the statistical practice benchmarks with the exception of the seasonal adjustment of the data had been attained. Indeed, the lack of seasonal transformations to sub-annual data in areas such as the Labour force and production indicators also represents a barrier to the easy interpretation of this data.

We have seen above that the regional data on retail prices is probably the most reliable in terms of timeliness. Unfortunately, in many countries in the region this data is being compiled on the basis of expenditure patterns derived from data that may be more than 15 years old. However, the prospects for the near term are very promising and many of the OECS should carryout or complete household expenditure surveys over the course of

1997. Once this data is incorporated into the CPI weights it should significantly improve the situation.

Once we move out of the area of the real sector the picture brightens. All the countries in the sample are meeting the statistical practice benchmarks for the fiscal sector while in the case of the financial statistics the major problem is the lack of seasonally adjusted data. In the case of the BOP the OECS was leading the region in implementing the recommendations of the Fifth Edition of the IMF's Balance of Payments Manual. This is largely a reflection of the success of the ECCB in coordinating BOP compilation in the OECS. However, this should be tempered by the fact that for some of the countries in the OECS the average (5 year) ratio of total trade flows to net-errors and omissions exceed the 5 percent benchmark. While this tests may not be very strong and it may be possible that positive errors may net out negative errors the persistence of the problem over a period of years may signal either serious coverage problems or capital flight. In a similar vein, the lack of published data on export and import price or unit value indices for the region has serious implications for the reliability of the measurement of regional trade data.

#### Data Integrity and Confidence

Our final set of benchmarks seek to evaluate the kinds of measures that statistical offices and other regional data provider are putting in place to engender the confidence of their users. The summary results are presented in below. The table show for each country the raw score obtained by applying the items in Table 3 to the various data categories. Again, the National Accounts is the weakest area. While CARICOM countries were generally well served with statistical legislation that granted statistical organizations the authority to collect the data and provide for the non disclosure of individual information. Unfortunately, in most cases this legislation, with the exception of STATIN in Jamaica, did not convey the necessary administrative autonomy that they statistics offices needed for effective functioning. Moreover, the lack of effective administrative autonomy could



give users the impression that these organizations were subject to political interference. Notwithstanding the general lack of administrative autonomy it is clear that statistics offices can do a lot more to engender the confidence of users in national accounts information. Indeed, the higher scores in obtained for the consumer/retail price category is indicative of the kind of simple measures that can be adopted to the dissemination of National Income data.

**Table 12: CARICOM Performance Against Data Integrity and Confidence Bench Marks**

Category Country	National Accounts			Consumer/Retail Prices			BOP			Financial Statistics		
	General Access	Public Access	Documen- tation	General Access	Public Access	Documen- tation	General Access	Public Access	Documen- tation	General Access	Public Access	Documen- tation
Maximum	4.0	3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0
Antigua	1.0	0.0	0.5	0.0	0.0	0.0	3.0	1.0	3.0	2.0	1.0	3.0
Bahamas	1.0	0.0	2.5	2.0	2.0	3.5	3.0	0.0	3.0	2.0	1.0	3.0
Barbados	1.0	1.0	1.0	2.0	2.0	3.5	3.0	2.0	3.0	2.0	1.0	3.0
Belize	1.0	0.0	0.0	2.0	2.0	1.5	3.0	0.0	3.0	2.0	1.0	3.0
Dominica	1.0	0.0	1.5	2.0	2.0	1.5	3.0	1.0	3.0	2.0	1.0	3.0
Grenada	1.0	0.0	0.5	2.0	2.0	1.5	3.0	1.0	3.0	2.0	1.0	3.0
Guyana	1.0	0.0	0.0	2.0	2.0	3.0	2.0	0.0	2.0	2.0	1.0	3.0
Jamaica	2.0	2.0	3.5	3.0	2.0	4.0	3.0	2.0	3.0	2.0	1.0	3.0
Montserrat	1.0	0.0	0.5	2.0	2.0	1.5	3.0	1.0	3.0	2.0	1.0	3.0
St. Kitts	1.0	0.0	0.5	2.0	2.0	2.5	3.0	1.0	3.0	2.0	1.0	3.0
St. Lucia	1.0	0.0	1.5	2.0	2.0	2.5	3.0	1.0	3.0	2.0	1.0	3.0
St. Vincent	1.0	0.0	0.5	2.0	2.0	2.5	3.0	1.0	3.0	2.0	1.0	3.0
Trinidad	1.0	0.0	2.5	2.0	2.0	3.5	3.0	2.0	3.0	2.0	1.0	3.0

Typically these measures include press releases to provide simultaneous access, strict publication schedules, the provision of some basic commentary by the primary compiler. Moreover for the countries with re-based indices good quality documentation on concepts sources and methods is usually available.

The issue of the provision of analytical commentary on the release of the data merits some further discussion. It is important that the primary compiler issue *independent* commentary on the meaning and significance of the numbers that have been presented to the public. In the many it is the typical practice in CARICOM that the statistics officer/s may provide a large part of the analytical commentary that appears in ministerial publications. This would usually raise no ethical concerns except in the case were these

ministerial publications are the only place that the general public can access the expertise and knowledge of the primary compilers of MET data. This mode of dissemination immediately raises concerns in the mind of some users about the kind of filtering process applied to the data before it could be released to the public.

The scores obtained for the BOP and Financial and Monetary statistics were generally higher in the area of the general integrity benchmarks and documentation but generally weak in the area of public access. This is not entirely unexpected given the role of the regions Central Banks in the compilation of the data. Regional central banking legislation usually provides a strong platform for statistical data collection and usually provides the organizations with the necessary administrative autonomy. However, the organizational culture of the central banks and the need for conservatism and a high degree of confidentiality in the operations of these institution have clearly impacted negatively on the access to the public scores. While most of the regions central banks provide a subscription service to major publication none has committed it self to advance release calendars. Additionally, the usual dissemination practice was not to provide simultaneous access to the routine published data by the general public. Instead, each central bank has established a "special priority lists" for key users including seniors officials at commercial banks and other financial institutions, academics and so on. These users are then given more timely access to the published data. This system may have evolved partly as a response to a slow and expensive mail based circulation system. and it is probably be the best way to service a small but widely dispersed subscriber base. Moreover, the regions central banks are usually willing to provide the required data on requests form the general public. Unfortunately, what ever its merits the present dissemination process does not guarantee simultaneous access to that data by all classes of users.

## Summary and Conclusions

In this paper we examined three major aspects of the data dissemination performance of CARICOM statistical organizations. The paper focused on the key issues of coverage, periodicity and timeliness, data quality and the perceived integrity of the data. The paper revealed that CARICOM data dissemination performance was generally mixed and the deficiencies of coverage, periodicity and timeliness were particularly pronounced in the area of the National Accounts. At the same time the situation was not entirely bleak and CARICOM member states were producing fairly high quality data in areas like monetary and financial statistics. Indeed, even in the context of the serious deficiencies identified in the regional national accounting output CARICOM states produce a variety of comprehensive production indicators, which could, within the context, of an appropriate theoretical and information technology framework be utilized to alleviate the situation.

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