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THE PRODUCTION OF STATISTICAL DATA AND INFORMATION IN THE CARIBBEAN

... Proposals for increasing efficiency in this sphere

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THE PRODUCTION OF STATISTICAL DATA AND INFORMATION IN THE CARIBBEAN

… Proposals for increasing efficiency in this sphere

Introduction

Much has been written on the difficulty of obtaining statistical data on the Caribbean. Many commentators have examined the problem from several angles, including the organization of the statistical offices, the issue of training and the issue of budgetary resources that impose an upper limit to the size of staff that can be employed at the statistical office. While there is much to say about any of the issues given as examples of the facets of the problem, in the final analysis the management of limited statistical resources is at the core of the data poverty.

This paper examines aspects of the external and internal environments that impact the production and delivery of relevant and accurate statistics. Whereas there is great variability in the size of the statistical offices throughout the subregion, the difficulties encountered in the production of statistics are differences in degree rather than in kind.

This paper draws from information collected in a survey of Caribbean government statistics-producing offices and examines the following:

- The issue of disclosure of information that could breach the confidentiality that underlies the relationship between the statistical office and its data suppliers;
- The authority of other organizations to collect and publish statistical data;
- The organization of data collection, processing, analysis and dissemination within any country;
- The issues of duplication of effort and respondent burden;
- The identification and capture of statistical series of emerging importance.

Included among the proposals for increasing efficiency and effectiveness in the production of statistics is a discussion on the present mechanism for bringing on board the measurement of new indicators of emerging phenomena of national interest and a definition of the boundaries of statistical production. With some will and commitment, the statistical production frontier can be displaced upwards and to the right with little additional burden on the recurrent expenditure of central government.

General characteristics of the producers of statistics in the English-speaking Caribbean countries – Orientation and organization

The English-speaking Caribbean countries share a similar background of being the former colonies of the United Kingdom of Great Britain. As colonies their main function was to supply the colonial power with agricultural produce or derivatives that were not grown in the metropole and for which a demand existed. Conditions were propitious for the growing of sugar cane in the West Indies and a market for sugar existed. Accordingly, the landowners cultivated sugar cane estates and procured labour to ensure production. The production pattern in the colonies was therefore geared to catering for externally originating demand while depending on a return flow of goods for consumption. An underdeveloped subsistence sector provided a number of agricultural products for local consumption. This relationship between what was produced and what was consumed determined the open nature of the economies by making them heavily dependent on international trade.

Because of the nature and ownership of the export crops and the nature of the goods imported, many of which tended to be capital goods, the terms of trade weighed in favour of the imported goods, a fact that persists up to the present. The supply and demand relationship between the metropole and the colonies created monocultures in the colonies. A narrow primary production base (often comprising one major crop) linked to paternalistic supply arrangements safeguarded the colonies' products from competition from other sources of supply as markets were owned or controlled by the producers of the exports of the colonies. While keeping the colonies dependent on the metropole, this "comfortable" arrangement prevented the development of a diversified production structure in the colonies. The need for the achievement of efficiency as a key to competitiveness in production did not therefore arise. With the advent of independence and the new preoccupation with nationalism and national income, the first soundings on the need to diversify production were made. Those noises have become all the more strident in the recent past with the coming into reality of globalisation.

The accounting systems that tracked the agricultural production and trade were simple. Production data accounted for the number of acres planted and the yields. External trade statistics were introduced to analyse the quantum and direction of the trade. Demographic statistics were introduced to measure the labour force and its rate of natural increase, which information could be used to project future supplies of labour. The tripod on which stood the early statistical (accounting) system comprised trade statistics, demographic statistics and price statistics. The Colonial Secretary was arguably the first government statistician. Around the period of the 1940s statistical offices began to be formally inaugurated in the Caribbean with an ordinance that borrowed much from the Statistics Ordinance of the United Kingdom. The

statistical office was referred to in most cases as the central statistical office as it was the centre of all statistical activity and the organization responsible for publishing government statistics. The duties of the created statistical offices[1] were in the following vein:

- To take any census;
- To collect, compile, analyse, abstract and publish statistical information relating to the social, agricultural, mining, commercial, industrial and general activities and conditions of the inhabitants …
- To collaborate with departments of the government in the collection, compilation, analysis and publication of statistical records of administration; and
- Generally to organise a coordinated scheme of social and economic statistics relating to the country.

The size of the statistical offices in the Caribbean increased in the 1960 through 1990 period, in accordance with the degree of complexity of the countries' economies. This would explain the relatively large sizes of the offices in Barbados, Guyana, Jamaica and Trinidad and Tobago *vis à vis* those of the other Caribbean countries. The Jamaica and Trinidad and Tobago Offices have staffs of over 300 persons while in the Organisation of Eastern Caribbean States (OECS) the average size of the statistical office is less than 12. One statistical office has a complement of four persons who are expected to process price statistics, trade statistics, economic statistics and a growing array of social statistics. Even in the best of person – machine mixes, 12 persons cannot produce the same output as 300. The wide divergence in statistical output between the four countries mentioned above and the rest of the English-speaking Caribbean is hereby explained.

Variability in statistical output in the Caribbean

The simple and relatively undiversified nature of the economy of the Caribbean countries has determined in the past the domestic demand for statistics. In the OECS, demand centred on external trade statistics, the retail price index, some notion of national accounts statistics, labour force and demographic statistics. In those smaller islands, the labour force statistics could be obtained every 10 years after the conduct of the decennial population and housing censuses. Until recently, the need for greater frequency in the reporting of household statistics was not apparent. On the other hand, the more developed countries of Barbados, Guyana, Jamaica and Trinidad and Tobago had developed from an early date, national household survey capabilities with surveys that measured employment and the labour force on a quarterly basis. Estimates of these series were therefore more available in the four relatively more developed countries than in the rest of the Caribbean.

[1] The Statistics Act, Chapter 19:09 of Guyana is used as a reference point for the functions discussed in this section.

Differences in scope of statistical production are clear when a comparison is made between the more developed countries of the Caribbean and the less developed countries. This is explained by reference to staff size as discussed above. In addition to scope differences, however, differences in quality of statistics produced are also evident. The quality differences are partially explained by the small staff size in the less developed countries. One staff member who must compile more than one series of statistics cannot perform at the same level as four officers in a larger statistical office who concentrate on two or three sectors only in the compilation of the national accounts. This fact has implications for multi-country projects where economies of effort are expected as personnel from several countries are trained or participate in the production of comparable series across countries. Comparability is restricted to a high level of aggregation while the dataset is absent in the smaller countries at lower levels of aggregation.

Antecedents to the need for greater statistical output

The new shift towards globalisation and the increased international competition that it has spawned have seen the removal of many protective tariffs, preferential markets and quota arrangements in international trade. The move towards the achievement of a "level playing field" has found a number of erstwhile protected producers to be unequal to the challenge of achieving competitiveness in the contemporary world order. Globalisation has brought with it the imperatives of full knowledge of the market, the external environment and improved monitoring capabilities. Actions necessary to the production of a level playing field include knowledge of markets, of costs of production and technology utilized in competitor countries as well as in the producer (home) country. This knowledge requires the keeping of statistics of production and costs of production. It also requires the warehousing of this information and its retrieval for subsequent research. The creation and maintenance of databases and data mining capabilities are tasks that are information-technology intensive. Some of the more developed countries of the Caribbean are deficient in this aspect of housekeeping. To a far worse extent is the situation in the less developed countries, generally. The concept of the value chain[2] has not yet struck forcibly either the private sector or the government sector. The need for fuller information concerning any economic sector, subsector or establishment in the face of globalisation confronts at times the official stance on confidentiality as per the statistics ordinance.

[2] The value chain may be regarded as the set of activities within an organization that are crucial to its viability and competitiveness. These activities may be categorized into two groups: - 1. Primary activities; and 2. Support activities. The primary activities are directly related to the main organizational activity such as manufacturing of a particular product or range of products. They include:

1. In-bound logistics such as materials handling or operations,
2. Out-bound logistics such as distribution, marketing and sales and after sales service.

Some issues that have determined the production of statistics

A number of situations have influenced the present performance regarding statistical production in the Caribbean countries. Budgetary issues aside, the willingness to foster sound and integrated statistics should be made patently clear. Whereas vocal and written responses to suggestions for improvement in statistics are made, little has been done in most cases to move the situation one step forward. Among the areas of concern are the following:

1. Responsibility for the dissemination of government statistics;

2. Confidentiality of data collected and the protection of privacy;

3. The centralised or decentralised nature of the collection, compilation, analysis, storage and dissemination of all statistics;

4. The issue of duplication of effort among other data-producing agencies;

5. New data requirements and the inability of the Statistical Office to provide the new datasets required;

6. The evolution of some government agencies into producers and publishers of statistics;

7. The problem of a motley group of producers of statistics with varying degrees of staff preparation to manage statistics;

8. The use of administrative records to supplement data collected expressly for the derivation of statistics and statistical indicators;

9. The emergence of the Central Bank as a major producer of statistics;

10. A positive official stance on information gathering and communication;

11. The establishment of priorities for data collection and information production;

12. The absence, in the final analysis, of statistical systems in the Caribbean countries.

Definition of statistical activities

Statistical activities as discussed in this paper include the following:

- Planning of statistical surveys, their sample design and questionnaire construction;
- Training of all statistical personnel;
- Data handling and processing;
- Communication of survey findings;
- Research methodology;
- Data analysis and projections;
- Incorporation of data produced by other agencies into research or publications;
- Use of administrative statistics;
- Statistical consultancy; and, most importantly
- Management or coordination of statistical initiatives.

The above activities follow closely those outlined by the Office of Management and Budget[3] of the Executive Office of the President of the United States of America in a document that observes the various types and levels of statistical activities across the government sector.

Responsibility for the dissemination of government statistics

The Statistical Ordinances and Statistics Acts of the English-speaking Caribbean are similar in their recognition of the statistical office as being the official disseminator of government statistics. The Ordinance is also clear in its understanding that not everything collected and disseminated can possibly be prepared at the statistical office. Some data are of a specialist nature and would best be collected by the specialist agencies that require them. The Ordinance gives the director of statistics the authority to delegate the collection and processing of data to an organization that in his opinion can process its data in accordance with the standards as expected by the statistical office. The basis of this empowerment can be found in the clause on delegation of functions which, in the case of Guyana, states:

> *"The statistician may, in writing, appoint any person as an authorised officer for the purposes of this Act".*

In the English-speaking Caribbean, the position of the chief statistician is that of head of department. The position reports to a permanent secretary and is, therefore, not as eminent as it is in the United Kingdom or in Canada where the chief statistician is regarded as being of equivalent status as a deputy minister. Although the director of statistics (chief statistician) may claim the authority to exercise some leadership over the collection and processing of data in the public sector, this has, by and large, not happened in the Caribbean. Part of the explanation may

[3] Office of Management and Budget, Statistical Programs of the United States Government, Fiscal Year 2002

be the difficulty of organizing a decentralized statistical environment with no formal authority. Another part of the explanation may point to the relatively low level of the chief statistician in the public service hierarchy and/or the standing in society of the holder of that post.

The central bank is also provided with an act that enables it to collect data under penalty of the law. Its area of operation is clearly the banking sector as it is the authoritative agency in this regard. The central bank has had a history of necessary collaboration with the statistical office. As is the case with any collaborative arrangement, the degree of collaboration depends on the relationship between the heads of the organizations involved in the collaboration.

In addition to the statistical office and the central bank, other ministries have begun to create their own statistical units without reference to the statistical office. Poor conceptualization of how these units should be structured, trained and operate characterise these new creations. The career path of the heads of these units is extremely constrained, as the heads are outside of a statistical system and their lateral and vertical mobility are therefore constrained.

Confidentiality of data collected and the protection of privacy

The statistical office will not publish data that would lead to the identification of any individual or divulge the profit position of an establishment without the express written consent of the person or establishment. This is the major selling point for the collection of data under the Statistics Act. The chief statistician must earn the trust of the community of respondents that the data provided would not be used to the advantage of any interest group and to their own detriment. Having earned that trust, he or she must retain it. Counterpoised to the commitment to confidentiality is the need to provide information that can be used meaningfully by government planners and trade negotiators. Camdessus[4] [1999] observes the following:

> *"There is a strong consensus for making transparency the "golden rule" of the new international financial system".*

Accommodation may be achieved by presenting data for the subsector comprising less than the required minimum of establishments with data for another subsector that is somewhat related. A policy on confidentiality would preserve the privacy of information collected for statistical purposes making it inadmissible for action to be taken against the data provider, while seeking a modality as suggested above for accommodating disclosure that can assist in research.

The Statistics Act also constrains any employee of the statistical office from divulging information that might exert an influence upon the conduct of business or that may result in personal gain under penalty of imprisonment and the imposition of a fine. The taking of an oath of secrecy upon appointment to work in the statistical office demonstrates the seriousness with which the confidentiality requirement is taken.

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[4] Camdessus, Michel, Managing Director of the International Monetary Fund (IMF) at 32nd International General Meeting of the Pacific Basin Economic Council, Hong Kong, May17 1999.

A multiplicity of surveys of businesses and households by a variety of agencies does not inspire confidence in the degree to which privacy will be respected. Surveys represent an element of invasion of privacy. Not all information collected is collected under the Statistics Act. This means that in a number of surveys the research organization conducting the survey is under no legal obligation to observe confidentiality of the data collected. The increase in respondent burden may militate against the level and quality of response to priority surveys. Indeed, the freedom for agencies to go into the field to collect data may hint at a lack of priorities in data collection. It corroborates the assertion that there is no statistical system in effect.

The centralised or decentralised nature of the collection, compilation, analysis, storage and dissemination of all statistics

At present in the Caribbean, the system governing the collection, compilation, analysis, storage and dissemination of all statistics at national level is loose. Indeed, it may be correct to state that the collection, compilation, analysis and communication of statistics is not done on a systematic basis throughout the public sector. Several directors of statistics confessed that they did not know what statistical activities were being undertaken by various ministries in their countries. Many of the statistical offices are named "Central Statistical Office" and play no great role in leading or regulating the statistical system in the country. Others, more correctly, are called "Statistics Offices" and do not convey the impression that they play a central function in the production of national statistics. They do not coordinate the collection or any aspect of the statistical process nor do they help in the determination of what statistics are to be collected. The various statistics acts allow the chief statistician to determine the extent of centralization or decentralization that can be accommodated, given the resources available within the public service. The ability to influence centralization or decentralization would depend on the status of the chief statistician in the public service hierarchy. The position of the statistical office in the ministerial array would signal to the other ministries the seriousness that should be attached to initiatives to convene effective statistical priorities committees.

The findings of the survey show that in a number of data collecting and processing organizations in the public service, the level of preparation of staff in statistics is confined to "on-the-job" training with no evidence of deep underlying statistical theory or principles. The analysis coming out of such organizations must of necessity be *a priori* suspect to the extent that the statistical personnel in those organizations are more than likely not to possess the required level of competence to perform analysis and interpretation of data collected. Statistical reports compiled by such organizations would benefit from the oversight of the specialist organization which is the statistical office. Although the chief statistician can perform the function of technical filter to statistical reports prepared for publication, he or she is not explicitly provided with a tool to enforce that desired function. The chief statistician cannot in an informal situation of unregulated production of statistics impose that requirement on a head of ministry that is senior to him or her.

The issue of duplication of effort among other data-producing agencies

Duplication of effort is the result of a lack of coordination of data collection plans. To the extent that issues such as timing of the data collection exercise can be arranged, a coordinated entry into the field will have a better chance of producing accurate data than numerous sporadic entries into the field with questionnaires of differing quality and surveys of different designs. A statistical system that coordinates effort will be characterized by fewer, if any survey failures that result in no reports being produced. Uncoordinated data collection invariably employs different concepts, definitions and coding schemes, rendering the data collected useless for integration with other data sets produced through a system. Duplication of effort results in a greater budget outlay than would be the case in a coordinated approach to data collection. If the agencies seeking a particular set of data from the respondent community coordinated their efforts, both could make use of a greater data set than their separate budgets could afford, while procuring responses of a higher quality from a less harried respondent population. The reduction of duplication of effort is closely allied with the ability of the Chief Statistician to supervise a decentralised situation over which he or she has no formal control.

Most of the countries had at one time or other in the past a Statistics Priorities Committee comprised of senior officers in various ministries. The group met at the beginning of the year, especially to present and coordinate their plans for statistical data collection. In many instances, ministerial plans were made without knowledge of the proposed activities of the others. That forum served to minimize duplication of enquiries and preserved the sustainability of receiving high quality data from the respondent population that was not "over-exploited". The forum lost its effectiveness when the senior officers delegated the attendance at this committee meeting to junior staff who could not commit their ministries to any responsible course of action. The junior officers could not, for example, withdraw plans for conducting a survey in preference to receiving similar data already collected or being collected by another ministry.

Requests for data that could not be provided – A case of inadequate data coverage

All of the major data producers have been approached for data sets that they did not keep. This fact may have stemmed from the lack of cohesion among the data producers and the lack of dialogue among the planners and the data gatherers and processors as to what datasets would be required to monitor important aspects of national life. Data cannot be produced by one office in the hope that its notion of what is needed is one hundred percent correct. A mechanism for conducting a needs assessment would present a more complete notion of emerging data needs. In a system, decisions will have to be made as to whether some data sets have become less valuable over time and could, therefore, be discontinued in favour of the introduction of new sets. Unsatisfied demand for data should be considered to be an indicator of what is needed to inform planning at various levels and should be carefully monitored.

New data requirements and the inability of the statistical office to provide the new datasets required

It is clear that with a finite budget a statistical office will not, beyond a certain point, be able to provide new datasets by the process of addition to its portfolio without examining and pruning its output in the light of the relevance of the series produced. New data requirements may be met either by the elimination of datasets that have lost their relevance or by the identification of an agency within whose competence the monitoring of the current issue falls. The statistical office may, on the other hand, wish to ensure that approved statistical standards are observed by assisting in the drafting and preparation of the data collection instruments and in ensuring that the questionnaire contents will produce the answers sought by the initiative. The data collection for the new datasets may be made under the Statistics Act in which the chief statistician may delegate the authority to an agency for the collection and processing of data for official dissemination. In some circumstances, the statistical office may control the quality of the new survey by training field and office staff in all phases of survey taking and processing of the returns. This would represent a new function for the statistical office that has the potential of yielding greater returns than if the statistical office simply conducted the survey on behalf of a requesting ministry. This modality of assistance would result in a greater number of people trained in aspects of statistics to the point that their work could fit into a national statistical grid. The implications are a greater statistical output without additional recurrent expenditure on the part of the statistical office or the central government if one assumes that the people to be trained are already in place in their respective ministries and would have conducted the survey without help, albeit at a much lower level of excellence.

In the present Caribbean situation, the signal for the statistical office to inaugurate a new time series to monitor an emerging reality is self-generated. The planning apparatus should consult with the statistical office and signal the need for new series. If a statistical system were in operation and followed a strategic plan, the decision to inaugurate a new series would not be left to the statistical office. Consultation at this level is seldom made. There is only one case that comes to mind when the chief statistician was invited to be a part of the National Planning Committee[5].

The evolution of some government agencies into producers and publishers of statistics

The above scenario of statistics-producing ministries recognizing the technical leadership of the statistical office has not to date been the norm, although it should be. After planning became less important to some Caribbean countries, the statistical office lost some of its status when it was transferred (in the case of at least one country) to the supervision of a ministry that was not as strong as the one that had previously accommodated it. A number of uncoordinated statistical activities began to emerge throughout the public service. These new statistical units may have been headed by former employees of the statistical office who were offered more attractive salaries but had a severely shortened career and advanced training path as a result of

[5] The Chief Statistician of Jamaica was a part of the National Planning Committee in the late 1970s to early 1980s. Her status approached the profile discussed in this paper as being necessary for the Chief Statistician to enjoy the trust and respect of the Government and people.

the move. The new units did not have training budgets and, therefore, could not provide for the upgrading of the capabilities of their staffs. The statistical officer heading the units was invariably not fully equipped to conduct much of the general statistical training required. These new offices were organization-focused and did not seek to use the same definitions, classifications and coding schemes as the statistical office. Their output could not, therefore, be integrated into the datasets of the statistical office and inevitably was different and, at times, contradictory to the well-documented methodologies and output of the statistical office. Their publications tended to be less well-documented and of lower quality than those of the statistical office. Today there are, for example, statistical units in several ministries. The following list provides an idea of some of the main statistical units outside and apart from the central statistical office:

- Central Bank
- Ministry of Agriculture
- Ministry of Education
- Ministry of Finance/Planning
- Ministry of Health
- Ministry of Social Development

The relationship between these organizations and the statistical office is not the same throughout the Caribbean in terms of the coordination of statistical activities. For example, in Grenada, St. Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, the Ministry of Education coordinates its activities with the statistical office. This means that there is a level of awareness on the part of the statistical office of the ministry of education's data activities. However, most of the responding ministries of education – over 70% – either did not use the same coding system as the statistical office or did not know if their coding system accorded with that of the statistical office. Almost all of the ministries of agriculture coordinate their activities with the statistical office and most of them have seen the need to harmonize their coding systems. In most countries the pattern is the same. The statistical office is aware of the activities of the ministries, but exercises little control over the technical aspects of the treatment of data collected. The ministries of social development have tended to operate apart from the statistical office. Precisely in this type of area, there is need for close collaboration with the main producer of statistics in order to avoid bias in the collection or interpretation of the data in an area that can be politically charged. The central banks work closely with the statistical office and there exists transparency in their activities and methodologies.

There is relatively little duplication in the collection of administrative type statistics because those data are primarily important to the organizations that collect them for the purpose of informing their own work. Some of those data are useful in sector studies such as done within the context of the national accounts exercise.

A motley group of producers of statistics with varying degrees of staff preparation to manage statistics

The result of the captioned situation is chaos and Babel. The production of statistics is all about measurement and the replication of that measurement over time. The concepts and definitions used to define the phenomenon to be measured must be relevant to an overall framework within which the measurement must take place. For example, if the data to be collected and the measurements to be made are to feed into the assessment of the national wealth, the national accounting framework must guide the concepts to be employed.

The several data-producing ministries may very well continue to produce their statistics, but should operate in relation to the need for integration of their data sets to the extent possible. This suggested linkage with the statistical office, however loose, will ensure that dysfunctional duplication of effort does not occur and that the maximum amount of synergy is achieved by a planned approach to the collection, processing and sharing of data among potential users. One acceptable manner of effecting the technical quality control over the statistical activities of an unevenly trained set of statistics producers would be to create a Management Committee on Statistical Standards. The Committee will be able to assist in the design of data capture instruments that are of high quality and computer processing ready.

In addition to the suggested Management Committee on Statistical Standards, a mechanism for establishing standards and codes of good practice both nationally and internationally has been created by the International Monetary Fund (IMF). This finds expression in the General Data Dissemination System (GDDS) and the more stringent Special Data Dissemination Standard as propounded by the IMF and implemented by a growing number of countries in the world. The objective of the initiative is to promote transparency in the understanding and use of statistics, thereby minimizing false impressions about the quality of the data and avoiding major surprises in the economy when the economic and social outturns are at variance with the indicators.

The use of administrative records to supplement data collected expressly for the derivation of statistics and statistical indicators

Many of the other data-collecting ministries collect data by means of administrative records. In most, if not all, cases these administrative forms are legal documents and cannot be altered except by means of an act of parliament. These forms, in most cases, had been designed to serve narrow ministerial interests and do not provide adequate information to the national accounts statisticians who must provide statistics for national planning. A re-design of these forms would provide an opportunity to make fuller use of this source of information in the national interest. The chief statistician or someone appointed by him or her can chair this body. This mechanism can be enabled if a national information policy is put in place and implemented. The implementation of the GDDS of the IMF and the World Bank would signal a measure of transparency in the collection and treatment of data.

The emergence of the central bank as a major producer of statistics

As the Caribbean countries gained their independence from Great Britain, the onus was on them to protect their currency. This duty brought into focus the establishment of central banks. In the 1960s a number of these organizations were created and began the task of monitoring the money and overall economic and social development of their respective countries. Monitoring as performed by a central bank is time-critical and requires data with an absolute minimum of time lapse. Technical assistance from abroad was utilised at the time of establishment of the banks and stringent standards of data production were put in place.

The Eastern Caribbean Central Bank (ECCB) was established in 1983 to monitor and regulate the money and banking landscape of the OECS.

The new central banks recruited staff of relatively high calibre and established statistical and research units. Recruitment of staff of proven ability in these areas increased the probability of success of these units in the new banks. In most cases, there was close collaboration between the central banks and the statistical office with the central bank assuming the leadership role in money and banking statistics while being a major user of the output of the statistical office. The resource endowment of the central banks has ensured the creation and maintenance of vibrant research units that analyse the methodologies used in the compilation of the key economic indicators and ensure that the best quality indicators are used. Central banks form part of the statistical resources of the Caribbean countries. The imperative to produce key statistics juxtaposed to the weak nature of many of the statistical offices has forced the central banks to engage in activities that, under other circumstances, would have been done by the statistical office. In some countries, the Balance of Payments account is produced by the central bank. Indeed, the central bank is included in the GDDS as being a major actor in the production of national statistics.

A positive official stance on information gathering and communication

While an increasing number of users of statistics has begun to articulate the need for better quality relevant statistics and has observed the need for change in the information architecture, political will is yet to be registered and enacted in order to bring about the needed change. In every country of the Caribbean, despite the varying levels of sophistication of the statistical environment, there is need for the modernisation of the laws governing the collection, processing and sharing of statistics. The maximisation of national statistical resources can be approached only through the mapping of data requirements to data collection and the avoidance of duplication in the collection of data from an over-polled population of respondents. This exercise would be one of fundamental change and would require change management. Together with the change would come an important information technology component that would organize the data into a family of databases with varying levels of access to different publics. In order to populate the databases, data would have to be collected and treated before being placed in a database. A programme of education of the population would be necessary to assist in the procurement of acceptable data.

The national policy on statistical information would locate the statistical office appropriately within the public sector and would require that the chief statistician be of a status that commands the respect of the entire society. The chief statistician should be empowered to have the last technical word on the quality and appropriateness of any statistic produced. He or she should in fact be the auditor of the statistical output of the entire public sector.

Some salient comments on the organization of statistical offices and their ordinances

The all-too-easy recommendation, on the basis of *a priori* thinking, to revise drastically the statistical ordinances is made by proponents of statistical reform. A closer look at the ordinances, however, reveals that they are in fact forward looking and may be amenable to some changes, though not as drastic as might have been thought. A group of statisticians has as recently as September 2002 agreed with the recommendation to convene a meeting to examine the statistical ordinances and recommend their revision. That meeting should be enriched with the participation of legal minds.

The creation of a statistical system is as effective as the will that exists to create such a system. Championship of the idea must come from the top of the society and be fostered by public pronouncements in favour of such a system and by demonstrated support for its creation.

The establishment of priorities for data collection and information production

Data collection is an expensive undertaking. It is expensive from the point of view of budgetary implications. It is also expensive when one considers the opportunity cost of a respondent's time taken to fill in or otherwise answer questionnaires. The data collected from a badly designed questionnaire and a poorly selected sample of the population can produce results that are worse than no data. It would be of great assistance to data providers if government were to signal clearly its data and information requirements in the pursuit of its policies. At that point the Statistical Priorities Committee may wish to match the data needs with data already being collected and determine the needs for new datasets and how and by which agency they will be collected. The required action may range from a disaggregation of data already being collected to an entirely new dataset for which there should be discussion on concepts, methodologies for collecting the data and uses of the data prior to going into the field. In a situation of scarcity of resources, the list of new data requests should be presented in some order of priority, starting with the most urgent need and descending to the least. The important feature of this response mechanism is that it should involve all members of the National Planning Council or its equivalent augmented by the representation of the Statistical Priorities Committee. This modality of operation will provide information on what the short to medium-term data collection horizon would look like.

Whether in the short or medium term, the questionnaire should be so designed as to minimize the respondent burden. It should not, therefore, ask questions that will not be processed. The answering of unnecessary questions puts greater burden on the respondent and

may adversely affect the overall quality of the response. Many of the respondents reported that they did not process all of the responses to the questions included on the questionnaires.

The absence, in the final analysis, of statistical systems in the Caribbean countries

The situation in statistics that has been described in this paper cannot be called a system. A system is an organized entity that is made up of members who have specific contributory and complementary parts to play in its working. A system is characterized by its observance of a hierarchy, especially in the area of decision-making and regulation of activities of the members. A central nervous system activates the whole through a series of conditioned responses to external stimuli. To relate this thought to a statistical system, there must be a head or lead agency that provides guidance to the body. The head (agency) perceives an external stimulus and initiates a response to it. The member best equipped to perform the required function at the time pursues the implementation.

The statistical system requires tools such as formal legislation and the ability to set statistical priorities. On the subject of the setting of priorities, Fellegi [1995] observes the advantage of a centralised system in the establishment of priorities. He observes the relative ease of planning in a decentralised system where each component (member) covers only a part of the whole, but cautions that there is "little likelihood that the sum total of several constrained optimizations is equivalent to an overall optimum" in such a system. He cites the Bonnen Report[6] (President 1981) that attempted to design a decentralised system with a strong capacity for effective overall guidance. Such a system would be characterized by an influential coordinating office at the centre and headed by a chief statistician with substantive system-wide functions. Fellegi observes that attempts to operate decentralized systems had not been successful. He concludes that:

> *"... building an effective system-wide planning capacity remains one of the main challenges of decentralized statistical systems".*

The discussion leads to the conclusion that countries should move towards centralization with strong coordination at the centre. The major variable behind the success of this move would be to generate a supportive environment. Statistical systems are extremely vulnerable and depend on an array of active support. Because of their vulnerability, the probability of success of the system would rest heavily on the attributes of the chief statistician who must command the support of the administration and the respect of the entire society that he or she serves.

Proposals for increasing efficiency in the production of statistics in the Caribbean countries

Increasing efficiency in the production of statistics is not an end in itself. It is a process by which a set of societal goals may be achieved through the facilitation of the relevant data. The data design and acquisition are arrived at after consultation with a wide cross-section of

[6] President 1981, Improving the federal statistical system: Issues and options. President's Reorganization Program for the Federal Statistical System. Washington, D.C.: Government Printing Office, February.

stakeholders who must feel a sense of ownership of the process. To this extent, the objectives of the measure should be fully discussed before the design is made.

The legal framework governing the collection of statistics may be regarded as the expression of the political will to collect data for the purpose of arriving at an understanding of the mechanism of the economy and society. It is possible that there are a number of ordinances governing the collection of statistics. These should be reviewed with a view to harmonising them and clarifying their provisions. An understanding of the ordinances will clarify the issue of which organizations are empowered to collect and publish official statistics. It should also protect the respondent populations from unnecessary bombardment by spontaneously organized surveys.

The backdrop to the production of statistics should take into account the main users of the statistics and should publish statistics in a manner that the several categories of stakeholder can understand.

A major feature of an improved statistical system would be greater coordination than exists at present between line ministries and other producers of statistics. The forum of producers of statistics, if attended at a high level, can realise economies of effort and avoid duplication of data collection. This would also lead to the production of statistics that all users can utilize without doubts as to which of a host of estimates is the correct one. The suggested forum would ensure the production of meta data that describes every aspect of the estimates, from the sample design, to the method of collection of the data, to the issues of imputation for non-response and the derivation of the final estimates. It would also progress along the route to the use of uniform classifications and coding schemes.

If collective actions under a leading protagonist can bring about the changes recommended in the above section of this paper, one would be nearer to the formation of a statistical system.

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