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STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE**CONFERENCE OF EUROPEAN STATISTICIANS**Forty-eighth plenary session
(Paris, 13-15 June 2000)**QUALITY REVIEWS: A BACKGROUND NOTE**Paper submitted by the International Monetary Fund¹**I. INTRODUCTION**

1. The purpose of this note is to survey reviews of statistical activities that have been done in the past, including the motives that gave rise to them, as background for the discussion of quality reviews of statistical data (item 3 of the provisional agenda for the CES 2000 plenary session). The note will then explore a motive—increased transparency in an international setting—that seems to be playing an increasingly role; and to consider some implications for reviews in an international setting. In particular, the usefulness of a comprehensive and flexible framework to assess the quality of data is suggested.

II. REVIEWS OF STATISTICAL ACTIVITIES: CHARACTERISTICS

2. Reviews of statistical activities—whether of national statistical systems or individual agencies within the system or of specific sets of statistical products—are certainly not a new phenomenon. For example, over the last decade or so:

- The so-called Boskin Commission, a group of academics, reviewed the U.S. CPI. The study was mandated by Congress to answer questions about the adequacy of the CPI as a measure of the cost of living.

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- A review of the household survey program conducted by the Australian Bureau of Statistics was carried out by staff with wide user consultation as part of a comprehensive program of internal and external scrutiny.
- The Auditor General of Canada reviewed the management of quality in Statistics Canada.
- The UK Treasury reviewed the institutional framework for statistics and presented its ideas for enhancing the integrity of statistics.

3. These and a sample of other reviews now in the public domain are listed (with citations) in Annex 1, which identifies selected characteristics of the reviews. This sample—clearly nonrandom in that it is largely drawn from material in English on the Internet—provides a context for the presentation of two reviews included in the CES session on data quality reviews.²

- Some reviews have been conducted relative to specific, pre-set standards or criteria. One might hazard the conclusion from the sample that there is evidence of a move over the 1990s toward pre-set standards or criteria. It is noteworthy that the Fundamental Principles of Official Statistics, which originated in the CES before their adoption by the UN Statistical Commission in 1994, were referred to in several instances. (Further, Willem de Vries, in “How Well Are We Doing,”³ proposes a systematic approach that starts with the Fundamental Principles, but I am not aware that this approach has yet been applied.)
- The reviewers—those who undertook the reviews—have varied in training and background—e.g., statisticians and nonstatisticians; from within the agency being reviewed and from outside; data users and data producers; etc. Accordingly, the processes within which they worked differed because the reviewers held differing degrees of familiarity with the subject and needed to differing degrees to establish their objectivity.
- A variety of motives underlie the reviews. In some cases, the motive was to set out the facts and alternative remedies for a perceived problem. The UK’s *Statistics: A Matter of Trust* falls into this category. In some, an agency wished to confirm the overall strength of its program, perhaps with a view to identifying where improvements (and resources) were needed. BEA’s Mid-Decade Strategic Review of the Economic Accounts falls into this category. In some, the review is part of a quality assurance process. The Australian Bureau of Statistics’ review of the household survey program is an example. In yet others, a government auditor or inspector general was following their mandate to promote efficiency and good governance in the public sector. In all of these cases, the audiences

² The reviews considered in this note pertain to national statistical activities. Reviews of supranational and international activities are outside the note’s scope.

³ *Netherlands Official Statistics*, vol.13, Spring 1998. The article is also available on the IMF Data Quality Reference Site (see below).

for the review were primarily domestic—that is, the persons or bodies who would make decisions based on the review were viewed as dealing with domestic issues.⁴

III. INTERNATIONAL DIMENSION FOR REVIEWS

4. Some reviews of statistical activities probably have always stirred some international attention. For example, the report in the early 1980's by Sir Derek Rayner, which concluded that statistical information should primarily be collected to satisfy the needs of the UK Government rather than primarily for publication and which led to a reduction in budgetary resources, was food for thought in a number of countries. The Boskin Report, of course, had repercussions around the world. The Report and the comments by policymakers about it that were “in the air” were part of the concern that led to the United Nations Expert Group on Critical Problems in Economic Statistics.⁵

5. However, the call for reviews with an international focus, thus going beyond reviews that are only incidentally international, seems to be increasing in volume. The underlying reasons, or motives, recognize more explicitly a wider than national interest in the results of a statistical review. It can be argued that globalization has brought new motives and an associated wider international audience for statistical reviews.⁶

6. A year ago, in a provocative invited paper for the CES plenary session, Robert Chote, then of the *Financial Times*, called for national statistical agencies to submit themselves voluntarily to spot audits of particular statistical output.⁷ The audits would be to look in depth at the degree to which statistics are in line with best practice methodology and techniques. He believes that the role of a reviewer would best be carried out by an international group of statisticians so that national performance was assessed against the benchmark of global best practices.

7. In Europe, the motivation for reviews of statistical activities is driven by the link between statistics and policy at a multinational level. The first members of the European Monetary Union qualified on the basis of statistics. The special employment summit in November 1997 called for a follow-up through statistical indicators. The revision of the structural policy of the European

⁴ Of course, technical cooperation projects in statistics often begin with a review of the current status. However, these reviews are often viewed as confidential advice to the domestic authorities and thus are not in the public domain (or thus in Annex 1).

⁵ Statistical Commission, twenty-ninth session, 10-14 February 1997, E/CN.3/1997/2.

⁶ This note builds an argument about reviews from the demand side. As well, it is probably worthwhile to consider some features from the supply side—for example, that the increasing ease of long-distance communication (e.g., through e-mail) facilitates reviews with an international focus. For example, one can speculate that the National Statistical Agencies Benchmarking Network, comprising five national statistical agencies from around the world, was facilitated by late 1990's communications. (See the *Annual Report, 1998-99* of the Australian Bureau of Statistics.)

⁷ “Performance Indicators for National Statistical Systems,” CES/1999/14.

Union will be based on a set of harmonized regional indicators. The Director General of Eurostat, Yves Franchet, cites these links to policy as challenges for high-quality statistics at the European level.⁸ Eurostat has a specific approach for the development and implementation of quality at the European level, and the approach includes rolling review of statistical products and quality reports on statistical output in close co-operation with member states.

8. In the wake of the recent financial crises, there has been widespread agreement that the adoption of internationally accepted standards, or codes of good practice, can make an important contribution to the efficiency of markets and a strengthening of the international financial system. As described in an information note prepared for the CES plenary in June 1999, the IMF is responding to the request by the international community that it prepare, as part of its mandate to conduct surveillance of its member countries' economic policies, a report "that summarizes the degree to which an economy meets internationally recognized disclosure standards."⁹ For data dissemination, the Special Data Dissemination Standard (SDDS) and General Data Dissemination System (GDDS) were identified as the relevant standards.

9. By the end of 1999, two rounds of experimental assessments—"reports on the observance of standards and codes," or ROSCs—had been completed. Each report comprises two elements: a description of country practices, primarily in the core areas that directly impact on the IMF's work, and an independent commentary by IMF staff on the extent to which these practices are consistent with the standard being assessed. Data dissemination has been included in reports for nine countries thus far.¹⁰ Three of the nine reports on data dissemination that have been published are for countries in the ECE region. Those for the Czech Republic and the United Kingdom were done relative to the SDDS; that for Bulgaria was done relative to the GDDS. The data dissemination module of the ROSC for Bulgaria can be described using the same characteristics as shown in Annex 1.

- Subject of the review: The Bulgarian agencies that produce economic, financial, and socio-demographic data and their products.
- Reviewer: IMF staff.
- Origin or motive: Since mid-1997, Bulgaria has implemented wide-ranging reforms under a comprehensive adjustment program. Within the context of this program, Bulgarian authorities have aimed at increased transparency in several areas, including economic and social statistics.

⁸ "Statistics, A Challenge for the Future," 85th DGINS Conference, The Hague, May 26 and 27, 1999.

⁹ G-22 Working Group on Transparency and Accountability, October 1998. More recently, the G-20 finance ministers and central bank governors, meeting in Berlin in mid-December 1999, agreed to demonstrate leadership in the implementation of international standards and codes by undertaking the completion of these reports.

¹⁰ Most of the reports are on the IMF's Website <http://www.imf.org/external/np/rosc/index/htm>

- Standard or criteria used in the review: The GDDS—recommendations on data coverage, periodicity, and timeliness; data quality, data integrity, and access by the public to data.
- Process and product: Bulgaria's practices were compared with the GDDS recommendations by an IMF staff team that visited the country and on the basis of information provided by the Bulgarian authorities. The ROSC was published.

The earlier reports, including that for the United Kingdom, focused on the disclosure elements of the international standards—that is, the requirements to make information available to the public. The later reports also consider the quality of the information disclosed.

10. A third round of reports is underway. Reflecting the experience that the reports that only dealt with the disclosure aspects of the standards were not totally satisfying, reports in the third round are experimenting further with the assessment of data quality.

IV. TOWARD A FRAMEWORK FOR THE ASSESSMENT OF DATA QUALITY

11. As background, it is useful to recall the treatment of data quality in the SDDS and GDDS. The SDDS identifies best practices in the dissemination of economic and financial data in four areas—the so-called four dimensions: data (coverage, periodicity, and timeliness); public access to the data; integrity of the data; and data quality. In this context, quality refers to characteristics such as accuracy, adherence to international statistical guidelines, and consistency. The approach taken in the SDDS for the quality dimension is to call for the provision of information that would facilitate data users' assessment of quality according to their own needs. This information consists of methodological statements (covering the analytical framework, concepts and definitions, accounting conventions, nature of basic data, and compilation practices) and information that permits cross checks for reasonableness. The GDDS focuses explicitly, given the wider range of countries for which it is intended, on encouraging countries to improve data quality and helping them evaluate needs for data improvement. It is built around the same four dimensions as the SDDS; the data and quality dimensions are organized around statistical products, and the access and integrity dimensions are organized around the agencies preparing the statistical products.

12. Questions about data quality continue to arise. The experience with the early ROSC's was noted. In that setting, an obvious question is what steps can be taken to facilitate the assessment of data quality even-handedly across a wide range of IMF member countries? In addition, there are other questions. For example, what assistance can be provided to data users, including those in financial markets, to help them evaluate the quality of the data available to them? In the environment of increasingly easy access to data on the Internet, is there a way to focus more attention on data quality issues and to distinguish quality data from unsatisfactory data? How can national statistical authorities be assisted in assessing the quality of their data, and what incentives can be provided to encourage cost-effective improvements?

13. The IMF has undertaken two projects designed to further a dialogue about how the SDDS and GDDS can be used to increase understanding of data quality issues and to encourage

improvements in data quality.¹¹ First, in February 2000 the Data Quality Reference site was opened on the Dissemination Standards Bulletin Board (<http://dsbb.imf.org>). The site's main objective is to foster a common understanding of data quality. Drawing on contributions from the statistical community, the site introduces definitions of data quality, describes trade-offs among aspects of data quality, and gives examples of evaluations of data quality. In parallel, the IMF continues to work on elaborating a framework for assessing the quality of data used for macroeconomic analysis. The aim is to design an integrated and flexible framework in which data quality can be assessed by a broad range of interested users. The framework draws on the consensus that is forming around a multidimensional concept of data quality that was evidenced in several reviews in Annex 1. The concept, which builds on both a quality-of-the-system approach and a quality-of-the-product approach, includes such factors as integrity, accuracy, coherence/consistency, timeliness, understandability, and accessibility. Over the course of this year, it is expected that the framework will be discussed and tested in international meetings on several areas of economic and financial statistics.

¹¹ For background, see "Third Review of the Fund's Data Dissemination Initiatives" (March 15, 2000), on the IMF's website: <http://www.imf.org/external/np/sta/dsbb/2000/index.htm>.

Annex 1: A Sample of Reviews of Statistical Systems, Agencies, and Products

Subject of the review (A)	Reviewer (B)	Origin or motive (C)	Standard or criteria used in the review (D)	Process and product (E)	Comment (F)	Reference (G)
Government Statistical Service (GSS); UK	Working Party set up by Royal Statistical Society (including academics and a former GSS head)	The Working Party was established to provide an independent review of the criteria and mechanisms for monitoring the integrity and adequacy of, and public confidence in, official statistics.	The GSS was seen as having to be of fine quality: - earning and enjoying public confidence, and - providing accurate, timely, and cost-effective data.	The Working Party drew on contributions made in an open meeting, which included the then head of GSS. Additional submissions were received later. The report was published and dealt with four areas: - centralization and control; - a unit to strengthen evaluation and methodological research; - an advisory national statistical commission; and - need for a national statistical law.		1
Economic accounts—national, international, and regional; US Bureau of Economic	BEA staff	The purpose of the review: to evaluate the performance of the economic accounts and develop a plan to maintain and improve that performance.	The uses made of the estimates in the accounts determine the characteristics required of them. Some	The review consisted of three steps (see also Col. F): - Preparation of a series of background papers;	In earlier decade, reviews of BEA's accounts were performed by blue-ribbon panels. In this review, the outside perspective, which was viewed as vitally important, was	2

Subject of the review (A)	Reviewer (B)	Origin or motive (C)	Standard or criteria used in the review (D)	Process and product (E)	Comment (F)	Reference (G)
Analysis (BEA)			<p>characteristics that may be required, such as for comparability with estimates presented in other countries or for long time series, reflect specific purposes. More generally, users require three interrelated characteristics that may be summarized in terms of</p> <ul style="list-style-type: none"> - accuracy, - reliability, and - relevance. 	<ul style="list-style-type: none"> - Development of a draft plan to maintain and improve the accounts; and - Solicitation of outside comment and discussion. 	obtained in a different way and in a different step.	
Consumer Price Index (CPI); US Bureau of Labor Statistics	Advisory Commission to Study the CPI (Michael J. Boskin, chair, and four others)	Requested by the Senate Finance Committee, pursuant to a Senate Resolution. Upward bias when compounded over time, was seen as having enormous implication for the national debt due to over enduring of Federal program.		The CPI Commission represented the first intensive external evaluation of US price statistics since 1961.		3
Statistical System—Office of National Statistics (ONS)		The foreword opens with the statement that “Public Confidence in official statistics has for too long	Enhanced integrity, both actual and perceived:	The paper posed a number of specific questions and invited	A summary of the comments was made public.	4

Subject of the review (A)	Reviewer (B)	Origin or motive (C)	Standard or criteria used in the review (D)	Process and product (E)	Comment (F)	Reference (G)
and the Government Statistical Service; UK		been clouded by concerns for their integrity.” The paper presents the Government’s ideas for enhancing integrity by improvements to the overall framework for statistics.	<ul style="list-style-type: none"> - assured quality of official statistics (sufficiently accurate and reliable for the purposes for which they are required; efficiency also a factor) - freedom from political interference in the compilation and presentation of statistics. <p>Refers to the Fundamental Principles of Official Statistics as part of the international context.</p>	comments on these and related questions.		
Balance of payments and international investment position; Australian Bureau of Statistics (ABS)	ABS staff	The review was provided in a chapter of a manual on <i>Concepts, Sources, and Methods</i> .	The approach taken reflected the view that to be of most benefit to users, statistics need to be a reasonable and timely measure of the real world events to which			5

Subject of the review (A)	Reviewer (B)	Origin or motive (C)	Standard or criteria used in the review (D)	Process and product (E)	Comment (F)	Reference (G)
			<p>they relate. High-quality statistics need to be—</p> <ul style="list-style-type: none"> - accurate; - not subject to large revisions; - timely; - relevant (i.e., measure the concepts in which the users are interested); - comprehensive in coverage; and - easily accessible. 			
<p>National accounts aggregates— GDP and gross national income; US Bureau of Economic Analysis (BEA)</p>	<p>BEA staff</p>	<p>The purpose of the review was to evaluate reliability. The focus of the review was on the current quarterly estimates of current-dollar and real GDP and GDP components. Reliability was evaluated by looking at measures of revisions to answer four questions about direction, acceleration or deceleration, difference from trend, and cyclical turning points.</p>	<p>Reliability was defined in terms of measures of revisions: bias, dispersion, and relative dispersion. The report does not directly address “accuracy,” because such an evaluation would require data on the total measurement error, which cannot be observed.</p>	<p>The article is based on a report to the US Office of Management and Budget required by Statistical Policy Directive No. 3. The Directive requires, for each principal Federal economic indicator, that the agency prepare an evaluation every three years to consider, in addition to “accuracy and reliability,” documentation, avoidance of premature disclosure, and promptness in releasing estimates.</p>		<p>6</p>

Subject of the review (A)	Reviewer (B)	Origin or motive (C)	Standard or criteria used in the review (D)	Process and product (E)	Comment (F)	Reference (G)
Managing the Quality of Statistics; Statistics Canada (Stat Can)	Auditor General of Canada	<p>Audit objectives to determine whether:</p> <ul style="list-style-type: none"> - Stat Can systematically assesses the adequacy of quality management systems and practices... - Stat Can's self-assessments provide reasonable assurance about the adequacy of quality management systems and practices; - Stat Can appropriately informs users about data quality and methodology used. 	<p>The four self-assessments (see Col. E) were performed relative to Stat Can's six characteristics of quality in <i>An Outline of Statistics Canada's Quality Assurance Framework</i>:</p> <ul style="list-style-type: none"> - accessibility; - accuracy; - coherence; - interpretability; - relevance; and - timeliness. 	<p>Audited Stat Can's self-assessments of four programs (see Col. D); reviewed Stat Can's policy and practices for informing users about data quality and methodology; reviewed documents and interviewed Stat Can staff; interviewed key users; compared Stat Can's approach to managing quality with practices in a number of respected statistical agencies in other countries.</p> <p>Report available to the public.</p>	<p>The report notes that while there is general recognition that quality is multidimensional, there is no international standard definition of statistical quality.</p> <p>Stat Can approaches quality from a user's perspective.</p> <p>Over the past 20 years, Stat Can has put in place a variety of policies and practices to assure the ongoing relevance of its programs; built quality into its programs and products; and maintains an environment that encourages concern of quality.</p>	7
Household Survey Program; Australian Bureau of Statistics (ABS)	Review team of ABS staff	<p>Impetus came from recognizing that the current level of demand for information from the household surveys exceeds the capacity of the survey vehicles and</p>		<p>Consultations, involving formal meetings and informal discussions, were undertaken by the review team with key government users. Information was</p>	<p>The operations and performance of the ABS are subjected to a comprehensive program of both internal and external scrutiny.</p>	8

Subject of the review (A)	Reviewer (B)	Origin or motive (C)	Standard or criteria used in the review (D)	Process and product (E)	Comment (F)	Reference (G)
		resources. As a result, there are important gaps in the statistics available. The review involved re-assessing continuing demands against emerging new demands.		<p>circulated to a wider group and their input sought. Three papers were circulated. Review recommendations were discussed by the Australian Statistics Advisory Council.</p> <p>A further report on implementation of the review was promised for the next ABS annual report.</p>		

¹ Royal Statistical Society’s Working Party on Official Statistics in the UK, “Official Statistics: Counting with Confidence,” J.R. Statist. Soc. A (1991) 154, Part 1, pp.23-44.

² “Mid-Decade Strategic Review of BEA’s Economic Accounts,” *Survey of Current Business*, February and April 1995. (Available on BEA’s website: <http://www.bea.doc.gov/bea/aw/0295od/maintext.htm>.)

³ Final Report to the Senate Finance Committee from the Advisory Commission to Study the Consumer Price Index, “Toward a More Accurate Measure of the Cost of Living,” December 4, 1996.

⁴ Economic Secretary to the Treasury, *Statistics: A Matter of Trust* (a consultation document presented to Parliament), February 1998 (CM 3882). (Available on the ONS website: <http://www.ons.gov.uk>.)

⁵ Australian Bureau of Statistics, “The Concept of Quality,” in *Balance of Payments and International Investment, Australia: Concepts, Sources and Methods*, Chapter 15. (Available on the IMF Dissemination Standards Bulleting Board: <http://dsbb.imf.org/aus.htm>.)

⁶ Bruce T. Grim and Robert P. Parker, “Reliability of the Quarterly and Annual Estimates of GDP and Gross Domestic Income,” *Survey of Current Business*, December 1998, pp. 12-21. (Available on BEA’s website: <http://www.bea.doc.gov>.)

⁷ 1999 Report of the Auditor General of Canada April Chapter 3, “Statistics Canada: Managing the Quality of Statistics.” Available via Internet at <http://www.oag-bvg.gc.ca> (Website of the Auditor General of Canada.)

⁸ 1998-99 Annual Report of the Australian Bureau of Statistics, Chapter 2, “Review of the ABS Household Survey Program,” Chapter 2, Canberra, 1999. (Available on the ABS website: <http://www.abs.gov.au>.)