

REVISIONS POLICY FOR OFFICIAL STATISTICS: A MATTER OF GOVERNANCE

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Abstract: This paper argues the time has come to bring revisions more fully out in the open and to draw on statistical experience from around the world to work toward identifying a set of good practices. These good practices make up what we can call “revisions policy.” Revisions policy should be recognized as an important aspect of good governance in statistics. Good governance in statistics, in turn, is part of public sector transparency and accountability more broadly.

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INTRODUCTION

“Revisions.” The word elicits a wide range of images in the world of official statistics, not all of them pleasant. In statistical offices, the image is often of extra work, to develop new series while continuing to prepare and disseminate the to-be-revised series and to carry time series back. To data users, it also means extra work, to update databases and reanalyze time series to see if history has been rewritten. More traumatic than the images of extra work is the image of mistake. Especially in the past but still to some extent today, revisions are associated mainly with mistakes having been uncovered.

This paper argues the time has come to bring revisions more fully out in the open and to draw on statistical experience from around the world to work toward identifying a set of good practices. These good practices make up what we can call “revisions policy.” Revisions policy should be recognized as an important aspect of good governance in statistics. Good governance in statistics, in turn, is part of public sector transparency and accountability more broadly.

At least four developments have put the spotlight on revisions. First, the need for improvements in official statistics has received substantial attention in recent years. For example, the financial crises in the 1990’s, in which the lack of relevant data figured prominently in delaying diagnosis, led to a call by the international financial community for the International Monetary Fund (IMF) to establish standards for the dissemination of data to the public. The IMF responded by developing the Special Data Dissemination Standard (SDDS) and the General Data Dissemination System (GDDS).² More recently, the Partnership In Statistics for Development in the 21st Century (Paris21) consortium of developing countries and donors called for a shared international strategy to seek adequate support for national statistical systems to build to evidence-based policymaking. With determination, cooperation, and goodwill, the need for more and better statistics is being translated into a number of improvements. Some improvements will be additions to sets of statistics, but many will be changes in existing time series. As numerous improvements come onstream, there will be revisions.

Second, the international statistical community in the last decade has put major efforts into preparing and promoting methodological manuals for macroeconomic statistics.³ When countries adopt new standards, such as the *1993 System of National Accounts* or the *Classification of the Functions of Government*, it means major revisions.

Third, a growing share of the world’s population live within regional organizations. These include, for example, the European Union, regional central banks such as the East Caribbean Central Bank, the West Africa Economic and Monetary Union, and the Andean Community. Many of these organizations prepare

² The SDDS and GDDS were established in 1996 and 1997, respectively, to guide countries in the provision of data to the public. For more information, see the IMF’s Website at <http://dsbb.imf.org/Applications/web/dsbbhome/>.

³ For a summary, see Carol S. Carson and Lucie Laliberté, *Manuals on Macroeconomic Statistics: A Stocktaking to Guide Future Work*, IMF Working Paper WP/01/183 (available on the IMF Website).

statistical aggregates from their members' reports. However, the members often have varying revision cycles, with the result that the aggregates, once compiled, are either subject to continuing change or, at the other extreme, are not consistent with the members' data as disseminated.

Fourth, member countries typically have obligations to report data to international organizations, and these data provide the basis for decisions on, for example, lending, debt relief, and other assistance. In this setting, it is important to be able to distinguish between bona fide revisions and suspect—perhaps politically motivated—revisions in the data provided. In the IMF lexicon, reporting inaccurate information (as well as failure to report information) is referred to as “misreporting.” Although the cases of misreporting have been few, they give rise to difficult situations.⁴

It is not surprising, then, that pressure is building at the international level for work on revision practices. For example, The IMF Executive Board, in discussing countries' obligation to provide data to the IMF, encouraged national authorities to articulate their policies on data revisions.⁵ And from the perspective of national authorities, participants of the Consultative Seminar on Governance of National Statistical Systems recommended that statistical agencies promptly report revisions and that they provide information on revisions policy, and they urged international organizations to promote the use of good revision practices.⁶ The IMF Committee on Balance of Payments Statistics, in making plans for an updating of the fifth edition of the *Balance of Payments Manual*, has put revisions policy on its agenda.⁷

TYOLOGY AND TERMINOLOGY

Revisions, for this paper, are defined broadly as any change in a value of a statistic released to the public by an official national statistical agency.⁸ The statistic may be a level, such as the value of a flow (for example, GDP) or of a stock (for example, of financial assets), or a change in level, such as the rate of price increase. As foreshadowed by these examples, this paper will focus on revisions in macroeconomic statistics. Indeed, the set of country experience on which the paper draws is from macroeconomic statistics.

⁴ For example, in one case of revisions and misreporting of fiscal data, the IMF Executive Directors “expressed serious concern that the erroneous data had misled IMF staff and the Executive Board about economic performance; prevented the formulation and implementation of timely corrective measures; and resulted in the design of an adjustment program that was partly based on inaccurate information.” The country authorities committed to remedial actions. IMF News Brief No. 00/23.

⁵ “IMF Executive Board Reviews Data Provision for Surveillance,” Public Information Notice No. 02/133 (November 18, 2002).

⁶ See Proceedings of the Consultative Seminar on Governance of National Statistical Systems, Singapore, May 28-30, 2002, hosted jointly by the United Nations Statistics Division, the Statistics Department of the IMF, and the Singapore Department of Statistics. The Proceedings are available on the website of the Singapore Department of Statistics (www.singstat.gov.sg).

⁷ See the papers for the Fifteenth Meeting, under Data Quality, especially the paper “Revision Policy and Practice: A First Overview of Country Practices,” on the IMF Website.

⁸ The term “national statistical agency” will be used to cover national statistical offices, central banks, and ministries in the capacity of making statistical information available to the public.

Revisions can be classified in at least two ways. One way is by the reason for the revision, and another way is by the timing of the revision. It is especially useful to catalogue these in order to establish a common language.

Revisions classified by the reason

Revisions may take place for at least eight reasons. In reality, some of the distinctions are blurred because two or more kinds of revisions may be made at the same time. Aside from corrections of mistakes, the last item in the list, the reasons tend to break into three groups. The first group is the incorporation of more complete or otherwise better source data, encompassing the first three reasons. The second is routine recalculation, encompassing the next two reasons, and the third is improvements, encompassing the next two reasons.

- Incorporation of source data with more complete or otherwise better reporting.
- Incorporation of source data that more closely match the concepts.
- Replacement with source data of judgment or of values derived largely by statistical techniques.
- Incorporation of updated seasonal factors.
- Updating of the base period.
- Changes in statistical methods.
- Changes in concepts, definitions, and classifications.
- Correction of errors in source data and computations.

The first reason, incorporation of source data with more complete reporting, causes revisions across a wide spectrum of macroeconomic statistics. At one end of the spectrum, a first report on credit aggregates may be based on the largest financial institutions and then the aggregate is revised when reports from all institutions, including the slower ones that have less sophisticated reporting or are from outside the major cities, become available. At the other end of the spectrum, data from monthly samples may be replaced in national accounts components with data from more comprehensive annual samples. For example, in the quarterly national accounts of several countries, monthly data from a retail sales survey are used until they can be replaced with data from more comprehensive sources. Two other reasons for revisions are related. Updating of weights, as for price indexes, brings in information from more recent surveys. Incorporation of audited results, as for budgetary figures and data from financial reports, to replace early results in effect brings in “better” data.

The second reason, the incorporation of source data that more closely match the concept, is most likely to occur in datasets that piece together many data sources in a mosaic that represents a comprehensive picture of some aspect of the economy. The national accounts and balance of payments are prime examples of such datasets. For example, if production is to be measured, source data that represent sales (plus some adjustments) may provide a first estimate and then the estimate is subject to revision as data more closely matching production become available.

In some situations no current data may be available, and a first estimate is based on judgment or statistical techniques. A revision may then occur when data become available. Such situations may arise for quarterly national accounts. The United States uses judgmental extrapolation for the first quarterly estimate for several components, including domestic services and improvements on owner-occupied housing. Subsequently, data become available that can be incorporated.

These first three reasons often appear together, for example, in national accounts and balance of payments. In monetary and government finance statistics, the reasons often boil down to completing institutional coverage and incorporating the outcomes of audited reports.

Incorporation of updated seasonal factors relates closely to the incorporation of additional source data, and some lists of reasons for revisions do not list the two separately. Seasonal factors, such as those that are derived from a moving average of experience or from the most recent year (concurrent seasonal factors), can change as the new experience comes into, and older experience drops out of, the calculations. Some countries rarely revise the consumer price index to bring in new or additional price observations, but do revise once a year to incorporate updated seasonal factors. For example, the U.S. Bureau of Labor Statistics, with the release of the January index, each year recalculates the seasonal adjustment factors to reflect price movements in the just-completed year. This routine annual recalculation may result in revisions to seasonally adjusted indexes for the previous five years.

Updating of the base year of an index—that is, the year set equal to 100—is also often a routine reason for revision. This may be carried out as a separate step, but usually it is done when new data underlying the weights for the index are introduced.

Incorporation of changes in statistical methods is sometimes not listed separately because such changes often go hand in hand with changes in source data. However, they can also occur independently. For example, revision studies may reveal that a particular method can be improved or replaced by another to achieve greater accuracy or timeliness. In the last few years, this source of revision has become more prominent as countries moved from fixed-weighted volume and price measures to chain-weighted measures.

Changes in concept, definitions, and classifications, often stimulated by adoption of new international guidelines, are yet another source of revision. For example, when a country moved from following the fourth to the fifth edition of the *Balance of Payments Manual*, the definition of the current account changed to exclude capital transfers and acquisitions/disposals of non produced assets. The 1993 SNA embodied a broader concept of investment, so as countries move toward that standard and add software, for example, as investment, they introduce a new concept. Major efforts have been devoted to reaching internationally agreed classifications in recent years. The Classification of the Functions of Government (COFOG) and the Classification of Individual Consumption by Purpose (COICOP) are cases in point. The introduction of new classifications is often done on the occasion of the introduction of new concepts and definitions, but sometimes it is done on its own.

In addition, changes in presentation of statistics should be mentioned. They do not, strictly speaking, fit the definition of revision as a change in a value of a statistic. However, they often take place at the same time as revisions, especially revisions caused by changes in concept, definitions, and classifications. Changes in presentation are also often implemented to respond to the analytical needs of users. For example, Appendix II describes how Australia began reporting financial derivative asset and liability positions on a gross basis rather than on a net basis.

Finally, revisions occur as errors are corrected. Errors may occur in source data or in processing. For example, reporting institutions may discover after submitting the data that some components are missing or outdated seasonal adjustments may have been inadvertently applied.

Revisions classified by timing

As to timing, some revisions are made in the weeks or months shortly after a first release. These are “current revisions” because they affect the current weekly, monthly, or quarterly data. “Annual revisions” are made after data for all the months or quarters of a year become available. Audits are usually done for a calendar or fiscal year’s data, although the results may not be available for some time after the close of the year. Both current and annual revisions usually stem from the first four reasons: incorporating source data with more complete reporting, incorporating source data that more closely match concepts, replacing judgment and statistical techniques, and incorporating updated seasonal factors. Annual revisions often affect several years of data—perhaps three or four years, so an annual estimate may be subject to revision more than once. For example, in the U.S. national accounts, there are three such revisions, as important additional annual source data arrive in each of three years.

Less frequent revisions, often four or more years apart, may be called “comprehensive,” “major,” “historical,” or “benchmark” revisions. Typically they are occasions for major changes in statistical methods and changes in concepts, definitions, and classifications. Often these revisions are carried back, or backcast, for a number of years. Revisions that correct error, of course, have no predictable timing.

CONTEXT OF REVISIONS

This section will describe the context in which revisions occur and the parameters that must be taken into account by policies designed to manage the revisions process. The context of revisions can be analyzed from three main points of view: user needs, resource issues, and maintenance of credibility.

User needs

As documented in the data modules of the IMF Reports on the Observance of Standards and Codes (ROSCs), surveys and meetings with users from a wide range of countries confirm their concern about revisions and revisions practices.⁹ User needs with respect to revisions fall into the following four categories:

- The *timeliness* of first release of data and timing of subsequent revisions
- The *accuracy* of first release of data and subsequent revisions
- The *consistency* of data over time
- The *documentation* for the revisions that is provided to users

Timeliness

Some users—such as policymakers, investors, international organizations, and the media—put strong emphasis on the timeliness of statistics. A key aspect of timeliness is the early release of economic data. For a central bank to conduct monetary policy effectively, it will need to analyze data on inflation and growth of monetary aggregates that are as up-to-date as possible. For investors and financial markets to make informed decisions, they also need timely data. For the IMF to monitor adequately economic developments and Fund-supported programs in member countries, it requires the latest data at the earliest possible date.¹⁰

Another aspect of timeliness that concerns users is that the timing of first release of data and subsequent revisions is predictable and relatively stable from year to year. In addition, the timing of the release may need to be coordinated with preparing important official policy documents, such as government budgets.

Accuracy

While policymakers and financial markets place a high premium on timely data, they also need a degree of accuracy. Inaccurate data may cause them to make wrong decisions. Although they want timely data on which to base their decisions, they do not want to take a decision based on data that are likely to change substantially in the next month or next quarter. Among users, researchers and the academic community place perhaps the highest priority on accuracy, as timely data are less important to them than an accurate and comprehensive time series of data.

⁹ See the link on ROSC reports in <http://dsbb.imf.org>.

¹⁰ There are limits, of course, to how far statistical agencies can go in providing frequent and timely data because of the trade-off with accuracy and also because of resource constraints and the demands of good statistical practice. It is said that Alan Greenspan once remarked that he would like to have “weekly GDP,” which is indicative of the extremes that could be considered if timeliness were the only user need taken into account.

The importance placed by users on accuracy clearly requires that they be able to judge the accuracy of preliminary data and subsequently revised data. To make informed judgments, revised data must be clearly identified and documentation provided. The documentation should include information on the sources and methods used to prepare data, on changes to be incorporated in upcoming major revisions, and, post-revision, on the sources of the revision (see section 4 below). Some indication from statistical agencies of how accurate preliminary or estimated data are would also be useful.¹¹

Consistency

Many users, particularly those engaged in research and forecasting, require consistency of data over time. While they realize that revisions will yield more accurate data, they are concerned that revisions that are frequent or large may disrupt their databases and cause inconsistencies unless the revisions are backcast over a sufficient number of years. As well, users who work with several datasets will be concerned that revisions be carried out in a coordinated way to avoid lengthy periods when one dataset is revised and others are still on the old basis.

Documentation

To lessen the trauma caused by the revisions, users would want clear documentation. Basic documentation should include identifying in statistical publications data that are preliminary (or provisional or estimated) and revised data, explaining the sources of revisions, and explaining breaks in series when consistent series cannot be constructed. Documentation is particularly important when changes in concepts and definitions are involved because such changes can seriously affect the interpretation of various statistical applications (for example, forecasts) and empirical tests of the validity of economic theory.¹² Meetings and consultations with users arranged by the statistical agency can also be helpful in explaining the reasons for and content of revisions, particularly in advance of the revisions so that users can prepare better to deal with them.

Resource issues

Resources affect countries' revisions policies in several ways. On the one hand, there are specific questions of cost effectiveness (that is, is the increased accuracy gained from a revision worth the cost?). On the other hand, there are questions about the basic design of the statistical compilation system itself, which has fundamental implications for the costs of revisions.

¹¹ If researchers are trying to explain how policymakers make their decisions, they may want to use the initial estimates on which decisions are based and not the final data. See David E. Runkle, "Revisionist History: How Data Revisions Distort Economic Policy Research," *Federal Reserve Bank of Minneapolis Quarterly Review*, Fall 1998 (Vol. 22, No. 4).

¹² See Robert Eisner, "Divergences of Measurement and Theory and Some Implications for Economic Policy," *American Economic Review*, March 1989 (Vol. 79, No. 1), pp. 1–13.

As described in section II, revisions are driven primarily by the arrival of source data. Typically a core set of source data are available for the first estimates that are released to satisfy the need for timeliness. Then, as more detailed and comprehensive source data arrive, the first estimates are revised to improve the accuracy of the statistics. In designing the statistical compilation system and defining the surveys and administrative data to be used as source data, it is important to bear in mind the cost implications of alternative designs and definitions.

Statistical agencies must operate within limited budgets and make efforts to ensure the cost effectiveness of their programs, including revisions. Again it is a matter of balancing—balancing not only timeliness against the accuracy needs of users, but also balancing both timeliness and accuracy needs against the marginal costs of achieving improvements in both areas. Costs are incurred not only by the statistical agencies, but also by the respondents who must take the time and effort to complete the questionnaires and data submissions necessary to comply with data release and revisions policies. A kind of “cost benefit analysis” must be done in order to take realistic and sustainable decisions with respect to the frequency of data releases and revisions. It should be conducted in a way that balances needs and costs across different types of data users and different data sets. Unfortunately, no mathematical formula exists to conduct this type of analysis. It must, in effect, be accomplished in a less precise way through the process of consultation and coordination among statistical agencies and users, as well as with the political authorities who control the agencies’ funding.

In many countries, particularly developing countries, statistical agencies are often seriously under-resourced both in absolute terms and relative to other government agencies. In these circumstances, it will be important that statistical agencies undertake efforts to raise the consciousness of the political authorities to the serious consequences of neglecting to build adequate statistical capacity. International organizations have an important role to play in this arena. This was evident, for example, at an international seminar on statistical governance issues where representatives from developing countries noted how they valued the support that they receive from international organizations in raising increased budgetary resources.¹³ With respect to revisions, both statistical agencies and international organizations must impress on the political authorities of countries the critical importance of adequate resources to allow for the timely release and revision of official statistics.

Maintenance of credibility

Prime Minister Tony Blair, in his introduction to *Building Trust in Statistics—The White Paper on Statistics*, stated “I believe that having access to official statistics which we can all trust is essential in any healthy society. Statistics encourage debate, inform decision making both inside and outside government, and allow people to judge whether the Government is delivering on its promises. For official statistics to

¹³ Proceedings of the Consultative Seminar on Governance of National Statistical Systems, Singapore, May 28-30, 2002.

play that key role effectively in democracy, we need to have confidence in the figures themselves.”¹⁴ Confidence in the figures effectively must be built on confidence in the statistical agency disseminating them.

Fundamental to achieving trust in, or credibility of, statistical agencies is integrity. Integrity is a central element in the IMF’s Data Quality Assessment Framework and is also prominent in the U.N. Fundamental Principles of Official Statistics.¹⁵ Providing assurances of integrity involves, at the broadest level, enacting effective statistical legislation and ensuring the professional autonomy of statistical agencies. But establishing a sound revisions policy is also a key element necessary to gain the trust of users.

It is not unusual for a distrust of government (or the political party in power) to be translated into distrust of official statistics, or at least a healthy degree of skepticism. Revisions can be particularly sensitive if statistical agencies handle them in an unprofessional manner. At the extreme, users may even suspect the government is intentionally misreporting for its own political or financial motives. For example, investors might suspect the government is intentionally delaying or misreporting data on international reserves to prevent capital flight. Or the media may suspect the government is manipulating statistics to avoid criticism of its policy record. Or an international organization may worry that a government is misreporting to comply with a policy target.

What are the needs of users with respect to revisions and the credibility of official statistics? With respect to the release of first estimates, users need to be able to make informed judgments about the quality of these estimates. How accurate are they? What is the likelihood of further revision, and by how much and in what direction? When will the data be “final”? For the revisions themselves, users need to be informed about the causes of the revisions, as well as have access to complete documentation on methodology and procedures. Users will also be reassured if they see that revisions take place within the framework of an overall policy and according to a predetermined schedule. If the policy, procedures, and schedule are published, it will be evident that revisions are not ad hoc and for political interests, and that adequate safeguards exist to prevent abuses in this area. Finally, when mistakes are discovered, it is critical that the statistical agency report them to the public as soon as possible and provide satisfactory explanations to reassure users and enable them to distinguish honest mistakes from cases of “misreporting.”

GOOD PRACTICES FOR REVISION POLICIES

This paper has argued that a sound revisions policy contributes *inter alia* to good governance in official statistics. Many countries have not yet set out a well-articulated revisions policy. In recent years, however, revisions policy is receiving

¹⁴ The paper Building Trust in Statistics—The White Paper on Statistics, is available on the website of the U.K. Office of National Statistics (www.statistics.gov.uk).

¹⁵ Six of the ten U.N. Fundamental Principles relate to various aspects of integrity of official statistics.

more emphasis. For example, the *Quarterly National Accounts Manual*, Chapter XI)¹⁶ provides a discussion of revisions policy. The Ecofin Council of the European Union, in February 2003, included a section on revisions in its “Code of Best Practices on the Compilation and Reporting of Data in the Context of the Excessive Deficit Procedure.” As well, the IMF’s Data Quality Assessment Framework includes a number of good revision practices.

This paper builds on recent efforts to define good revisions policy. Its purpose is to work toward outlining a more comprehensive and internationally accepted set of good practices that would together constitute a sound revisions policy generally applicable. The good practices described below were arrived at by combining general considerations identified in the discussion of user needs, resource issues, and maintenance of credibility in section III, with specific practices drawn from a selection of examples of practices in place in various countries. The country examples—from national accounts, prices, government finance statistics, monetary statistics, and balance of payments statistics—are included in three appendices. A comprehensive description of revisions policy in the United States for GDP is in Appendix I. Another comprehensive single-sector example appears in Appendix II, which outlines Australia’s revisions policy for balance of payments statistics. Using the database of published ROSC reports, Appendix III presents short descriptions of certain aspects of revisions policies for a regionally diverse sample of countries.

Eight main revisions practices are identified in this paper. They are consistent with the general principles of good governance in statistics, such as they appear in the Fundamental Principles of Official Statistics and in the *Handbook on the Operation and Organization of a Statistical Agency*. In fact, the revision practices identified can be seen as making explicit the application of these principles about, for example, integrity, responsiveness to users’ needs, and professionalism in the context of revisions.

Consultations with users elicit views about revisions practices

Preliminary to elaborating a country’s revisions policy, it is important to consult the main users of official statistics to identify needs and priorities specific to the individual countries. Their views could be sought, for example, about their particular needs for timeliness of data, problems they experience because of revisions, and their priorities about balancing timeliness with accuracy and consistency.

A clear, short summary statement of when to expect revisions and why is readily accessible to users

Most revisions fall under a “revisions cycle.” Cycles typically incorporate current (for example, quarterly) and annual revisions as defined in section II and less frequent comprehensive or benchmark revisions that usually relate more to the two

¹⁶ Adriaan Bloem, Robert Dippelsman, and Nils Maehle, *Quarterly National Accounts Manual*, International Monetary Fund, Washington, D.C., 2001.

“improvements” reasons listed in section II. A noteworthy example of a clear, short summary of revisions policy is the description for national accounts in the United States in Box 1 of Appendix I.

The current revision cycle is relatively stable from year to year

Current and annual revisions are done broadly to incorporate more complete or otherwise better source data. The following practices relate to the timing of current and annual revisions:

- The revisions are timed to incorporate new source data
- The revision schedule takes into account the timing for preparing important official economic policy documents
- The revision schedule takes into account the timing of revisions in other datasets

Stability of the revision cycle from year to year is at the heart of good revisions policy. It is one of the few practices followed by all countries covered in Appendix III. Users place great importance on a revision schedule that is regular. Fortunately, for countries that decide to establish a revisions policy, it is not difficult to ensure that its timing is stable over time. Indeed, it is a logical outcome and one that promotes efficient implementation. The most common basis for stability is the timing of arrival of source data, which then triggers their incorporation into revised data.¹⁷ Occasionally, a balance must be struck between maintaining the stability of the cycle and making unpredictable but important revisions outside the cycle. Coordinating timing with important official economic policy events can also be useful. For example, Italy times the release of national accounts to coincide with the annual presentations to their parliaments on the economic situation. It is also important to coordinate with other macroeconomic sectors to ensure consistency (see example of Australia in Appendix II coordinating revisions of balance of payments statistics with national accounts).

Major conceptual and methodological revisions are usually introduced every four to six years, balancing need for change and users’ concerns

Major conceptual and methodological revisions relate mainly to the two “improvements” reasons for revisions outlined in section II—to incorporate new statistical methods and new concepts, definitions, and classifications—all superimposed on changes in the structure of the economy. These revisions are typically more far-reaching and complex than current revisions, and can be disruptive and problematic for users if they occur too often or take place in a confusing or unpredictable manner. A reasonable guideline for regular timing would be every four to six years. Timing such as this balances the need to avoid unnecessary disruptions

¹⁷ For government finance statistics and monetary statistics, a common basis for revisions is the official audit of the data, which are conducted more on the basis of accounting principles than statistical methodology. In fact, it is not uncommon to find that the only revisions of government finance and monetary statistics occur as a result of the official audits (see Italy [34] example for government finance statistics in Appendix III). Data are usually considered “final” after the audits, which tends to make further revisions unlikely.

to time series with the need to maintain the quality of statistics in line with international best practices and the changing institutions and structure of the economy. For example, see the description in Appendix I of the U.S. five-year cycle for major conceptual and methodological revisions for GDP and the descriptions in Appendix III of the four-or-more-year cycles in Italy [31], Norway [64], and Turkey [100] for national accounts revisions.

Although individual countries do not control the timing of major changes in international statistical methodologies (for example, the appearance of *1993 SNA* and the *BPM5*), a four-to-six-year cycle can generally accommodate these changes without undue delays and disruptions. Incidentally, it is also possible and can be helpful to users to coordinate the timing of methodological improvements with the current cycle of revisions timed for the arrival of better source data (see the U.S. example in Appendix I). Countries do have control, however, over the timing of methodological and classification changes that they undertake to reflect institutional and structural changes in their own economies. These kinds of changes can be accumulated, studied, and prepared for during the four-to-six-year intervals before they are finally published. The example of the United States in Appendix I is illustrative; the comprehensive revision of GDP in 1999 introduced improvements in definitions and classifications. The improvements included the recognition of business and government expenditures for software as fixed investment, the treatment of government employee retirement plans in the same way as private pension plans, and others reflecting institutional and structural changes in the economy.

Mongolia recently provided an example of a revision to reflect a change in methodology to come into line with international standards and to make corrections for previous years. The Chairman of the National Statistical Office and the Minister of Finance and Economy, in a Joint Resolution in November 2002, explained to the public in a clear and transparent manner a revision in GDP methodology. The previous methodology had not accounted for exceptional animal losses and resulted in significant misstatements of GDP, particularly in years of severe weather. An accompanying technical paper explained the reasons for changing the methodology and how the revision affected estimates of GDP in previous years.

Revisions are carried back several years to give consistent time series

To maintain the serviceability of data following major revisions, data should be revised back as far as is reasonable based on a balancing of user needs, costs, and availability of source data. The revised time series should be released simultaneously with the revised current data or soon thereafter, preferably in easily accessible electronic format. The revised series should be of sufficient detail and not so aggregated that users are not able to detect the sources of the changes. Clearly, some revisions are more difficult than others to revise backwards. Among these are data from surveys that have changed, data affected by legal constraints, and data constrained by accounting principles (for example, government finance statistics). Lack of resources also constrains the extent of backward revisions, especially for poor countries. Various second-best approaches are possible, such as the U.S.

practice described in Appendix I where GDP series are revised back to the last benchmark (usually five years) and further back for selected series that are particularly important. Estonia revised GDP back five years following a major revision, providing only annual data but offering to provide quarterly data on request.

Documentation on revisions is readily available to users

Preliminary (or provisional or estimated) data and revised data are identified as such

While this practice may seem obvious, it is not uncommon to find in many countries that preliminary and revised data are not clearly identified. This is especially likely in countries where revisions are not made according to a consistent or clearly stated revisions policy. It also occurs more often for government finance statistics and monetary statistics, where statistical principles may not be as much at the forefront as in national statistical offices. Serious confusion and misunderstandings by users could easily arise from neglect to identify changes in data. Examples of clearly identified status of data are provide in Appendix III for national accounts and balance of payments statistics (for example, Chile), for monetary statistics (for example, Estonia), and for government finance statistics (for example, South Africa).

Advance notice is given of major changes in concepts, definitions, and classification and in statistical methods

Users should be alerted in advance of major conceptual and methodological revisions to help them prepare for and understand better the reasons for and nature of the changes. The account in Appendix II of Australia's efforts to prepare users for revised balance of payments statistics according to *BPM5* is noteworthy. The statistical agency provided a description of the new standard and its benefits in advance, including illustrations of sample draft data tables to begin to acquaint users with the changes. Consultations with key users dealt with the implementation of the new standard, and a number of changes were made in the implementation strategy and schedule as a result. Various reports and discussion papers published in advance of the revision analyzed and described the effects on Australia's statistics. Other examples are the media conference called by Estonia to announce major upcoming revision in GDP (see Appendix III) and the preparations by the United States described in Appendix I to alert users to the next benchmark GDP revision.

The sources of revision are explained when the revised series are released

Breaks in series are documented when consistent series cannot be constructed

Complete and transparent documentation of revisions allows users to understand the sources of revisions and, if needed, adjust their analysis of the data. Perhaps even more importantly, complete documentation serves to promote trust in the credibility and integrity of the data and the institutions responsible for compilation and dissemination. Key parts of the documentation are about the sources of the revisions, including the

main flows of source data from the preliminary estimates to the revised data. It is also important that breaks in the series be clearly identified when consistent time series cannot be constructed. Documentation can be available to users in hard copy publications, websites, press releases, and dedicated seminars (for example, see Italy [32] in Appendix III). Box 2 in Appendix I provides an example of documentation for sources of revisions for the United States GDP, and Box 5 in Appendix II an example of explanation of revisions for Australia balance of payments statistics.

Users are reminded of the size of the likely revisions based on past history

It is particularly important for users who make decisions on the basis of preliminary estimates, such as policymakers and investors, to be able to make an informed judgment about the reliability and accuracy of the preliminary, provisional, or estimated data. How much confidence should they have in the first estimates? Accordingly, it is good practice for statistical agencies to conduct periodic analyses of revisions (or “revision studies”) and to make them available to users. Today’s IT environment makes such studies less demanding than in the past. The following two good practices for revision studies have been identified:

Periodic analyses of revisions investigate the sources of revision from earlier estimates and statistical measures of the revisions (for example, dispersion and bias)

The analyses are published for major aggregates to facilitate assessment of the reliability of the preliminary estimates

Measures of the direction and dispersion of revisions are the main topics of most revision studies. With respect to measures of the direction of revisions, if a study shows a systematic bias in the revisions, users can adjust appropriately their interpretation of the preliminary estimates. Alternatively, the discovery of bias by a study may lead to changes in procedures, and these can be announced with the study results. See the description in Appendix II of Australia’s discovery of negative bias in the balance of payments current account first estimates, and their changes in procedures in collecting source data to correct this bias. Revision studies can also be used to fine tune the timing revisions within the cycle.

Measures of dispersion of the revisions provide users with an indication of the accuracy of the preliminary estimates and enable them to assess the likely size of future revisions. Box 3 in Appendix I provides an informative explanation and table provided to users on the historic size of revisions of GDP in the United States. This statistical analysis provided a range within which future revisions of GDP could be expected (that is, “the fourth-quarter change in real GDP, now estimated at 0.7 percent at an annual rate, is not likely to be revised below 0.1 percent or above 1.6 percent in the next two releases”).

It is important to report to users not only the statistical analysis carried out in the revision studies, but also the basic data flows from the first estimates through all the revisions. The main conclusions of the studies should be clearly stated. For example, a recent U.S. revision study concluded that GDP revisions have no “momentum.” They are not biased in a way that could predict future revisions, and they are explained largely by new information/definitions (see Appendix I). Providing the basic data to users allows them to conduct their own studies of revisions if they wish. For example, Runkle (1998), in a study conducted four years earlier than the study mentioned above, found that some bias did exist in revisions of GDP in the United States.

When a mistake in reporting or processing is made, the revision is made in a transparent and timely manner

As the saying goes, “to err is human,” and contrary to some jokes, statisticians are human. Many different types of mistakes occur in official statistics, from simple mathematical and recording errors to misclassifications and mistakes in coverage. The mistakes may be by the statistical agency, or by the reporters of source data. It is critical for the integrity of a country’s statistical system that any errors are not only reported to users as soon as possible, but also explained in a way that gives assurance that the mistakes were not politically motivated. Explanations for mistakes are much easier when users are already well informed by complete metadata and related documentation on the compilation procedures and sources and flows of data used by the statistical agency. In such a transparent environment, it is just as likely that users will detect errors as the statistical agency, or will at least quickly understand the source of the error.

An example of reporting errors is provided in Box 5 of Appendix II. The Australian statisticians explain several errors in balance of payments statistics that they identified through improved data collection (expanded individual security reporting leading to detection of mistakes in classification) and analysis of data.

An example that received wider publicity was the recent announcement by the Philippine government that its balance of payments current account surplus had been significantly overstated for the past several years owing to an understatement of imports. An interagency task force, working with the IMF, identified these errors. Both the government and the IMF issued statements that the errors originated from the complex task of collecting and validating import data from a large number of companies following exchange liberalization that eliminated banking data as a source for imports. They also explained that the overall balance of payments, and both gross and net international reserves, were not affected, in order to provide a broader perspective of the economic significance of the correction. The clear and transparent explanations avoided an erosion in confidence and trust in the government that might have occurred if the errors had come to light in a less orderly and effective manner.

Appendix III mentions only one example that might be a practice regarding revisions resulting from mistakes. Norway [84], in a note to a press release, explained that a revision was caused by the identification of a missing major reporter. Closely related, however, are the practices noted for Estonia [27] and Ukraine [117]

of conducting internal analyses of errors made by reporting institutions. Identifying and correcting errors is the first important step, followed up by a transparent and timely report about the errors to users.

NEXT STEPS

The pressures are building from several directions, as noted in the introduction, to elaborate an internationally accepted set of good practices for revisions and to recognize the importance of a revisions policy. This paper tries to push the process further by suggesting a clear typology and terminology to facilitate discussion, by laying out the landscape of needs and constraints to be addressed, and by proposing a set of good practices for discussion.

The international statistical community is invited to discuss the proposed practices, particularly to refine them for macroeconomic statistics and extend them to other statistics, with a view to agreeing on a set of good practices for revisions of official statistics. Such a set could serve as a useful guide for countries designing revisions policies to fit their own particular circumstances. These practices could be adapted for presentation in international methodological manuals and in quality frameworks, such as the IMF's Data Quality Assessment Framework.

Meanwhile, however, both international organizations and individual country authorities could take intermediate steps. As noted in section III, the resource issue is a key factor in elaborating a revisions policy, and the resource issue is closely related to the profile or stature of official statistics in countries. International organizations can play an important advocacy role by impressing on the country authorities that good governance in official statistics is a key part of ensuring public sector transparency and accountability and accordingly that adequate budgetary resources should be provided.

Statistical agencies may also begin to take some actions in anticipation of an internationally agreed set of good practices for revisions policy. Conducting consultations and meetings with users and surveying their needs and priorities must be the basis for any well considered revisions policy. Communication with users will provide key information concerning the difficult task of balancing timeliness, on the one hand, and accuracy and consistency on the other hand, necessary to set a satisfactory schedule for the release of preliminary and revised data. Statistical agencies may also begin to implement some of the less debatable and complicated of the proposed best practices, such as the relatively simple and straightforward practice of identifying preliminary and revised data in statistical publications.

A concluding thought—perhaps once we begin to know revisions better, they will not seem so traumatic after all.