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Case studies*: using non-official sources in international statistics

CCSA - serving policy makers with international statistics

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* Earlier versions of the articles were presented at the "Quality in Official Statistics Conference 2014"

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Foreword

The Committee for the Coordination of Statistical Activities (CCSA) is composed of 45 international and supranational organisations whose mandates include the provision of international statistics covering the large majority of statistical fields.

The quality and comparability of international statistics cannot be taken for granted and are an essential basis for sustainable economic, environmental and social policy decisions. Public trust in official international statistics is anchored in the professional independence and impartiality of statisticians, their use of scientific and transparent methods, and the endeavours to provide equal access to international statistics.

Against this background, the CCSA members are committed to adhering to the ten Principles Governing International Statistical Activities[1] in order to provide high quality and comparable international statistics serving international policy needs.

As a rule, the primary source for the statistics provided by international and supranational organisations is official national statistics, which are typically supplied by national statistical authorities or other sources of authoritative data.

There are exceptional cases where international statistics use non-official sources. This may be, for example, to fill gaps where official national statistics are unavailable or only partially available, or to ensure the comparability of international statistics. It is important to stress, however, that sources of non-official statistics are chosen exclusively on the basis of professional independence, scientific methods and impartiality.

Against this background and for reasons of transparency, the CCSA in November 2013 published recommendations on the use of non-official sources in international statistics.[2] Among other things, the recommendations call for a *prior and continuous* consultation process with the relevant national (statistical) authorities and transparent documentation of when such non-official sources are used.[3]

The aim of this CCSA publication is to explain where non-official sources are used in international statistics to enhance quality, timeliness and comparability and thus support sound and sustainable international policy-making. We hope, through transparency and the provision of both methodological and conceptual examples, to foster the discussion of ways to improve methodological standards and thus achieve greater comparability and higher quality of global statistics.

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[1] http://unstats.un.org/unsd/accsub-public/principles_stat_activities.htm#fn1
[2] http://unstats.un.org/unsd/accsub-public/workpartner_ccsa.htm
[3] http://unstats.un.org/unsd/accsub-public/practices.pdf

Introduction

The Committee for the Coordination of Statistical Activities (CCSA) promotes inter-agency coordination and cooperation on statistical programmes and consistency in statistical practices and development. The members of the CCSA contribute actively to the development of a coordinated global statistical system producing and disseminating high-quality statistics. The CCSA Secretariat and CCSA website are hosted by the United Nations Statistics Division (UNSD). The Committee meets twice a year and is composed of top-level representatives of its member organisations.

In 2014 the CCSA organised a special session entitled "Serving policy makers with international statistics – use of non-official sources in international statistics" at the European Conference on Quality in Official Statistics, which took place in Vienna at the Schönbrunn Palace Conference Centre on 2-5 June.[4] The session was chaired by the CCSA Co-Chairs Mr Werner Bier, Deputy Director General Statistics of the European Central Bank, and Pietro Gennari, Chief Statistician and Director of the Statistics Division of the Food and Agriculture Organization of the United Nations.

This publication presents CCSA case studies showing how the committee's Recommended Practices on the Use of Non-Official Sources in International Statistics are applied by the respective international organisation.

[4] Official website for the conference programme: http://www.q2014.at/home.html.

Chapter 1: CCSA Recommended Practices on the Use of Non-Official Sources in International Statistics

The CCSA's Recommended Practices on the Use of Non-Official Sources in International Statistics,[5] released in November 2013, are guided by the Fundamental Principles of Official Statistics, the Principles Governing International Statistical Activities and the quality assurance frameworks of international and supranational organisations.

Recommended practices

While official statistics are typically the best source of information for international organisations, there are instances when international organisations need to use non-official sources to fill gaps or to improve data quality and comparability. While each international organisation makes decisions on data sources on the basis of its own needs and its data quality framework, the Committee for the Coordination of Statistical Activities recognises the following practices as the recommended approach to handling non-official data at international level:

Use of non-official sources

1. Non-official sources may be used by international organisations in compiling official statistics to reach the following objectives:
    a. to give background or context to data from official sources;
    b. to assess data received from official sources on their plausibility;
    c. to apply transformations to national official data in the interests of international comparability or for the purpose of producing new indicators (for example, applying different classifications, base years or units of measurement or constructing per capita ratios);
    d. to construct international data series in fields which are not covered by existing official sources;
    e. to impute national data where national official data do not exist or are of proven poor quality;
    f. to impute missing values within an official national time series;
    g. to extend time series.

[5] See footnote 2

2. Only professional scientific standards are used in determining sources of data and estimations in international statistical series. Accuracy, relevance, independence, stability and expected availability over time are among the most important factors to be considered by international organisations. Non-official sources are considered instead of national official sources only when the latter are not available or the statistics are of proven poor quality.

3. Non-official data may be used and disseminated by international organisations only after a thorough quality assessment of available official national and international statistics. In such a review, priority is given to data produced by national authorities within national statistical systems or as officially provided to the international organisation by national authorities.

4. The quality of the data-generation process embedded in the non-official source is reviewed before the source is adopted. The availability of consistent time-series is one of the criteria to be used to evaluate the quality of non-official statistics. The quality of the metadata provided by the non-official source may be used as an indicator of the seriousness of its statistical production.

Consultation

5. Relevant national official source organisations are consulted as appropriate when non-official data that fill gaps in official time series are published for individual countries.
6. In the event of a dispute between an international organisation and national institutions on statistics to be included in international statistical series, the international organisation initiates a technical consultation with national official sources with the purpose of finding a common position which does not compromise the quality standards of the international organisation and national official sources. It is expected that the majority of controversial cases can be resolved with technical consultations, but in the rare case that an agreement cannot be achieved, the international organisation may opt for one of the following actions:

    a. publish the data submitted by national official sources with a footnote which explains the non-compliance of the data with international quality standards;

    b. leave a gap and do not publish any data;

    c. publish the data according to the international organisation’s standards and acknowledge the data provided by national official sources;

d. publish data according to the international organisation's standards.

7. The methodology and criteria for selecting non-official sources are clearly stated in the international organisation's quality framework, which is widely accessible. International organisations are encouraged to facilitate information sharing with national counterparts to discuss and review data quality methods applied at international level.

8. International organisations make reasonable efforts to overcome the gaps in national data availability and quality that lead to the use of non-official sources and they prioritise capacity-building programmes in the areas where these gaps are more acute. When deciding on the use of non-official sources, international organisations carefully consider if the use of non-official sources by international organisations may undermine the efforts of national statistical systems.

Documentation

9. Consistent criteria for determining the selection of non-official sources or the production of original estimations and imputations are properly documented and made equally accessible to all users.

Dissemination

10. Non-official data are disseminated with clear and easily accessible metadata. They may be flagged when disseminated to inform users about the different nature of the source or to clearly separate data from official and non-official sources. Sources of non-official data and methodology used to construct new indicators or impute national data are made transparent and visible.

Chapter 2: Case studies and considerations on the Use of non-Official Sources in International Statistics

The Committee for the Coordination of Statistical Activities (CCSA) is providing within this chapter a collection of both methodological and conceptual examples and considerations where *non-official sources* are used in international statistics to enhance quality, timeliness and comparability and thus supports sound and sustainable international policy-making.

Chapter 2.1 The use of official and non-official statistics: an issue of quality or process? The case of United Nations Office on Drugs and Crime (UNODC)

by Angela ME, United Nations Office on Drugs and Crime (UNODC)

Abstract: National statistical offices have in the last decade embraced the notion of quality assurance and many international initiatives have supported the development of national quality assurance frameworks. Accuracy, relevance, timeliness, transparency, and cost effectiveness are among the key elements of these frameworks which encompass the principles of professional independence as recognized by the Fundamental Principles of Official Statistics recently approved by the UN General Assembly. The ethics of statistical programmes in international organizations is guided by the Principles Governing International Statistics, but the professional independence of statistical programmes in international organizations has not enjoyed the same level of recognition as for national statistical offices. There is not a universally accepted definition of official statistics for international organizations and the quality of the official data is usually a matter which is left to national debates as the production of official statistics is part of the sovereign attributions of Member States. When making choices on what data to publish, statistical programmes in International Organizations (IO) are sometimes confronted with the dilemma between using criteria exclusively based on data quality or criteria which are based on institutional roles where Member States expect IOs to take their data as “official” and therefore not questionable. While in the great majority of cases data quality criteria used by IOs match the one used by national authorities, there are instances where there is a discrepancy and where IOs are confronted with difficult decisions. One of the main reasons for the discrepancy is the difference between national and international concepts, definitions and quality standards. In few cases also data on topics covered by the international agenda are collected only by non-governmental institutions and IOs can only rely on non-official national data.

In dealing with this dilemma, The United Nations Office on Drugs and Crime (UNODC) follows a transparent process to disseminate international data which strives at maximising data quality and national ownership. Cooperation with Member States is the fundamental element of this approach.

Key words: data quality standards, international statistics, non-official sources

UNODC cooperation with Member States to ensure data quality and national ownership

As other international organizations, the quality of UNODC statistics highly depends on the quality of the data and information existing in and provided by Member States. Member States are also crucial partners in activities where UNODC is involved in primary data collection (survey implementation), therefore maintaining an explicit, constructive and transparent relationship with Member States is crucial in maintaining data quality.

Given the wide variability in the capacity of countries to produce high quality data, UNODC faces several challenges to bring all national data under the same conceptual and quality framework. The office recognizes the authority of Member States to define the best data to be reported to UNODC, however, sometimes the data reported by Member States do not meet the comparability and quality required by international standards. UNODC follows consistent procedures to validate the data it publishes.

Provision of standard methodology and definitions. In order to ensure a common understanding of the data that Member States are requested to transmit to UNODC, detailed definitions and guidelines are included in the data collection tools. The three main data collection tools utilized by UNODC to collect data from Member States (ARQ, CTS, IDS) have been improved in 2011 to provide clear information on the data required. Additionally, metadata are requested to assess the compliance of data provided by countries to international definitions and concepts. A contact e-mail address and telephone number is provided to answer questions or provide support to countries in the compilation of each questionnaire. The Office also provides training to countries to improve the understanding of standard concepts and methodology required to fill out the two main data collection tools on drugs (ARQ) and crime (CTS). Continuous attention is devoted to developing international methodological standards. A recent example is the International Classification of Crime for Statistical Purposes (ICCS), which for the first time provides internationally agreed definitions and classification criteria on criminal offences.

Standard and transparent process to assess the quality of the data provided by Member States. UNODC assesses the quality of the data against specific criteria. These are strictly linked to topic and the nature of the data. For example, a minimum criterion for data on the

prevalence of drug use is the coverage of the population. All data are checked for accuracy, adherence to the provided definition, coverage, consistency and comparability.

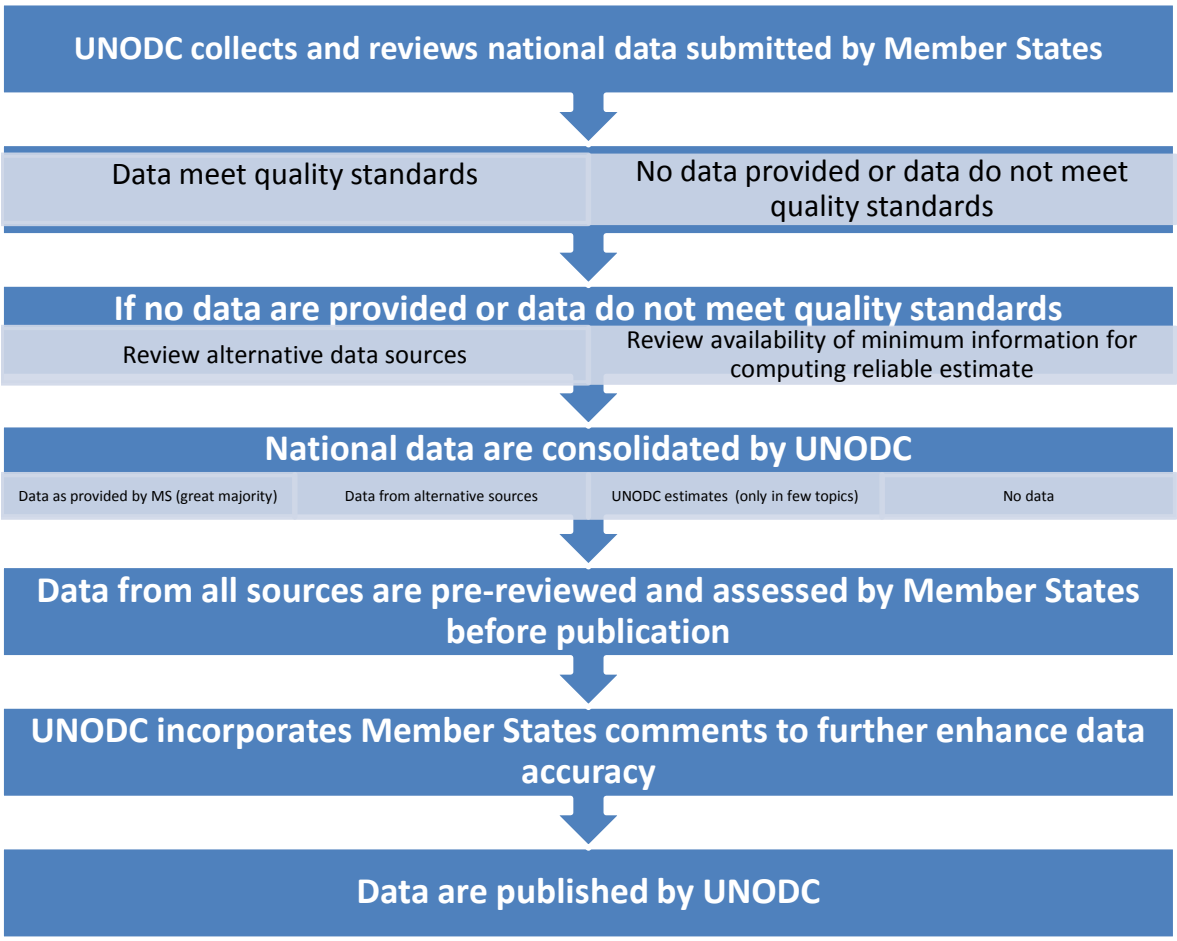
Technical focal points in Member States. UNODC encourages Member States to appoint national focal points with whom the Office can have technical discussions to obtain clarifications on the data provided and ensure the selection of the best data. The identification of Focal Points also helps to better target UNODC efforts towards training programme on data collection tools.

Transparent process to fill data gaps or to substitute national data which do not meet quality standards. There is an heterogeneous capacity of countries to report data to UNODC. Many countries report timely and good quality data but some do not respond to data requests and others submit only partial information or information that do not meet international quality standards. In these circumstances the Office looks for alternative information browsing different sources. If data are identified, they are assessed using standard quality criteria (which depend on the topic and nature of the data). Criteria to select alternative sources, including from other international organisations, are made publicly known. In some areas, UNODC presents national estimates made on the basis of statistical techniques, following a standard model for all countries[6]. UNODC does not fill all national data gaps and many empty cells remain in international data series. In countries where UNODC has identified technical focal points, the above procedures are discussed and evaluated together with the national counterparts.

Data pre-reviewed by Member States. Before final publication, UNODC submits draft national data to Member States for their review. Data include those originally provided by Member States, those obtained by other sources or estimates made by UNODC. Feedback provided by Member States on the draft data are incorporated into the final data series. This step can considerably improve data quality as errors or misunderstanding can be clarified. In order to preserve its professional independence, UNODC does not ask Member States to pre-review the narrative or the analysis which is derived by the data, unless narratives include other information (qualitative or quantitative) outside of the reported national data.

[6] An example is the estimation process utilized by UNODC to estimate adult prevalence rates of drugs on the basis of data from school surveys.

UNODC data validation process



Management of disputes between UNODC and Member States on publication of national data. In rare occasions there may be disagreements between UNODC and Member States on the national data to be published. While UNODC's unique goal is to maximize data quality as described above, it can happen that a Member States apply a different quality standard to its national data and that experts cannot come to a common position. One option that UNODC applies in such circumstances is not to publish any data.

Chapter 2.2 The Use of non-official sources for transforming national data into an international statistical product – UNIDO's experience

by Shyam Upadhyaya, UN Industrial Development Organization (UNIDO)

Abstract: When a research study covers a single country only, the required data can be obtained from the country's national statistical office (NSO). However, if the study encompasses several countries, it may be more practical to derive the necessary data from international agencies, considering that the data they make available are internationally comparable in terms of statistical coverage, classification standards, valuation and computation methods of major variables. International data producing agencies face two major challenges. First, the data reported by NSOs may not be distorted when presented in international publications, and secondly, quality assurance of data in terms of accuracy, coherence and international comparability requires a reasonable degree of adjustment of official data. UNIDO applies five stages of transformation. In the first two stages, official data are fully preserved. In the subsequent stages, official data are adjusted and supplemented by UNIDO's own estimates based on external sources including non-official sources. This paper describes UNIDO's efforts to retain and utilize official national data, but to simultaneously also meet users' requirements for more comprehensive and coherent statistical data.

Key words: data transformation, comparability, non-official sources

1. Introduction

UNIDO Statistics maintains an international industrial statistical database and disseminates global statistics through the publication of the International Yearbook of Industrial Statistics, World Statistics on Mining and Utilities and online access to INDSTAT and IDSB databases[7]. The primary sources of these databases are results of industrial surveys conducted by national statistical offices (NSOs). National data are transmitted to UNIDO by returning the general industrial statistics questionnaire which contains eight indicators related to employment, wages, gross and net output and capital formation. National data undergo

[7] The Industrial Statistics – (INDSTAT) database contains data on major indicators of industrial statistics for around 160 countries at the 2- and 4-digit level of ISIC. The database can be obtained in CD Rom or accessed online on UNIDO's Statistics webpage. The Industrial Demand and Supply Balance (IDSB) database contains production and external data by country at the 4-digit level of ISIC.

scrutiny and transformation in UNIDO's data production process with the purpose of converting national data into an international statistical product.

The transformation process is part of UNIDO's data quality assurance framework. National data represent the official statistics of a member state; thus, it is necessary to preserve its original nature. Statistical products of UNIDO are freely shared with NSOs and their general conformity with national databases and statistical publications is greatly appreciated. At the same time, the quality assurance of data in terms of accuracy, coherence and international comparability requires a reasonable degree of adjustment of national data. Data transformation in the UNIDO context implies the improvement of data quality, but by no means a replacement of reported data. It refers to the entire process from detecting and correcting obvious reporting errors to nowcasting for the most recent years. Any corrective measure poses a certain degree of intervention to the original data. Data transformation at UNIDO is therefore carried out in stages, with the degree of intervention increasing from lower to higher stages. Consequently, the official status of data is fully preserved at lower stages, while data from non-official sources are used at higher stages.

This paper describes the different stages of data transformation at UNIDO Statistics and the use of non-official sources in this process. To preserve the official status of data, the use of non-official sources is limited to higher stages, mainly for the imputation of missing data.

2. Stages of data transformation

The main objective of data transformation is to convert national data into an international statistical product. National data inherently differ by currency, national adaptation of industry classification, reference periods, etc. Even when the country follows the international statistical standards for classification of economic activities, there is a regional or national adaptation in most cases that adds to the deviation from international standards. Occasionally, data are reported with a certain degree of deviation from own national standards. Quite often, NSOs carry out split or combination of industry groups to adjust a smaller number of observations that cannot be reported separately for confidentiality reasons. Sometimes, adjustments are made to maintain the historical series of data initially reported in different versions of industry classification. The volume and sequence of work necessary to transform data is determined by the number of incompatible, missing and dubious values and usually delays the report. Obvious errors and discrepancies are immediately detected in UNIDO's screening process once the data transfer has been completed. More complex problems are encountered in the process of data analysis.

Eliminating inconsistencies and imputing for missing values is mostly based on reported figures. Economic variables, such as the number of employees and wages and salaries paid, output and value added, are highly correlated. Thus, the ratio derived from the reported

variables often serves as a predictor for missing values. However, there are cases in which one of the variables required to obtain an appropriate predictor for a missing value is not available in reported data. In that case, data from non-official sources come to play a crucial role. Another problem relates to varying time lags in data reporting. In some countries, industrial surveys involve extensive and time-consuming field operations which delay the publication of results that are subsequently reported to UNIDO. To bring the national data in line with the most recent single year, data need to be extrapolated.

Data transformation at UNIDO Statistics is carried out in five stages:

1. In the first stage, only obvious reporting errors are corrected. At this stage, data fully retain their original form. These data are used to pre-fill the questionnaire that is submitted to NSOs in the following round of data collection.

2. Any inconsistencies found at this stage are corrected with official data that are available in NSO publications or websites. Estimates are generated to correct obvious inconsistencies or to replace the missing values. Data contained in the survey reports conducted by NSOs under UNIDO-funded projects are also considered to be official.

Stages 1 and 2 fully preserve the official status of data. These data are published in the International Yearbook of Industrial Statistics and the World Statistics on Mining and Utilities with a brief description of the data source – such as the name of the data supplying institution, coverage and method of the survey and other information.

Estimated figures may be presented in these publications in relative or aggregated form only. These publications provide quick reference for policymakers and other users to the latest statistics on the general trend of global industry. Researchers and development analysts who prefer to carry out their own analyses using longer time-series data can contact UNIDO for a database in electronic media.

The databases disseminated in electronic media through CD Rom or online access to UNIDO's website are further transformed. The database in electronic media has wider coverage in terms of the number of countries reported and time periods.

3. Stage 3 resembles stage 2 in terms of process, but the difference is that non-official data can be used to make any necessary adjustments to eliminate the deviation of reported data from international standards.
4. Most of the imputation for missing data is done at this stage. It involves automatic interpolation as defined in the imputation guide as well as any remaining disaggregation due to the lack of supplementary information.

5. At this stage, extrapolation is carried out whenever applicable in order to bring the data in line with the most recent single year. A time lag of two years is considered normal for structural business statistics. However, many countries have longer time lags; thus, missing data for the latest years have to be estimated using the extrapolation method. Such estimates are considered provisional and are replaced as soon as survey data become available.

Data become available to update the database once it has undergone all stages of transformation. In general, data collection, transformation and updating is a live and ongoing process. Data are scrutinized as soon as they are received. However, UNIDO prepares a set of data products in CD or as an online version for dissemination purposes. These products are released once annually, a few months after the printed version is released.

3. Non-official sources

There is no common understanding among statisticians about the distinction between official and non-official sources. In the UNIDO context, non-official sources generally refer to data that were not officially reported or published by the national statistical organization (or any agency responsible for statistics). The substantial part of the UNIDO database is fed by data that is officially reported by NSOs on account of the mandate of the Organization in the area of industrial statistics. UNIDO also regularly receives data from other organizations such as OECD and UNSD under the data exchange programme, which are first reported to these agencies and then transferred to UNIDO. Naturally, such data are considered official data.

In some countries, industrial surveys are conducted under UNIDO-funded technical assistance projects. The project report usually cleared by the government contains the results of the survey. In case there is a delay in official reporting, the data in the project report are considered official and are entered into the database.

Hence, data from the following sources are considered non-official:

- Data compiled and disseminated by international agencies without direct reference to the national sources;
- Data obtained from commercial data providers or knowledge institutions;
- Penn World Tables, Economic Intelligence Units, etc.;
- Estimates using a combination of official and non-official sources;
- Imputed data;
- Estimates generated from time-series models – forecasts, nowcasts.

It is quite often difficult to distinguish official from non-official sources with regard to international agencies. Most international agencies collect data from national sources, however, these data are often supplemented with their own estimates, which cannot be considered official data of the given country. Therefore, not all data from international agencies can be regarded as official sources.

4. Imputation strategy

Non-official data sources are predominantly used at UNIDO for imputation of missing data in business structure statistics. In the case of macroeconomic variables, such as GDP and MVA, non-official sources can be directly used for the compilation of the final tables intended for publication. However, such data are mostly presented either in relative or aggregated form. Structure business data imputation can be carried out for a missing data item, missing period or missing section (entire country). UNIDO uses both the single imputation and multiple imputation method. However, in practice, single imputation based on the economic relation of variables is widely implemented.

A study was carried out at UNIDO to determine the extent of missingness in databases. For this purpose, data were scanned using the R-based VIM package – VIM stands for "Visualization and Imputation of Missing Values" (Templ, Alfons, & Kowarik, 2010). The visualization tools became particularly useful to explore the data and structure of the missing values, which helped in selecting an appropriate imputation method. VIM is applied only to identify missingness, i.e. it is used before imputation is performed.

The results of the study on time series evolution of missingness in UNIDO business structure data have shown that missingness increases in later years. As mentioned earlier, a normal

time lag between the survey and data reporting period is two years. However, this time lag is longer for more than 2/3 of the countries that are reporting data. For many developing countries, the time lag is longer than 3-4 years. Imputation may significantly reduce the extent of missingness, however, it cannot be completely eliminated due to the lack of auxiliary information required for imputation. Figure 1 illustrates how the extent of missingness changes after imputation is performed.

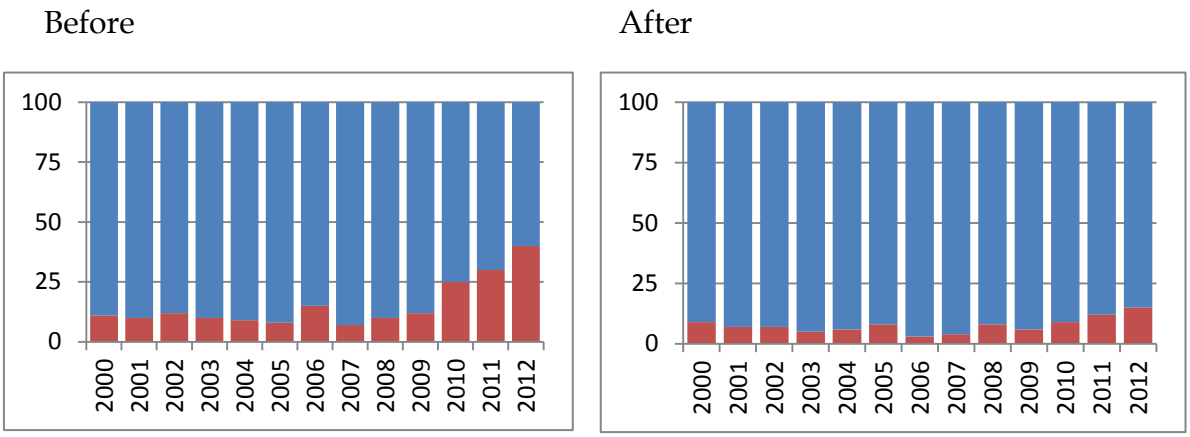


Fig 1: Extent of missingness over time before and after imputation

While for interpolation, officially reported data might be available for any auxiliary variable to be used as a basis for imputation, the same does not apply to extrapolation.

Suppose the estimate of gross output (EGO) is to be determined for any year t, which can be obtained from its value for the past year t-1 multiplied by the ratio of volume (IIP) and price (PPI) changes during the observation period. The estimation is done as follows:

$$EGO_t = GO_{t-1} * \left(1 + \frac{IIP_{t:0} * PPI_{t:0} - IIP_{t-1:0} * PPI_{t-1:0}}{IIP_{t-1:0} * PPI_{t-1:0}}\right) \qquad (1)$$

In this example, data for GO_{t-1} and IIP for period $t-1, 0\ and\ t$ are available in the UNIDO database from official sources, but PPI data are obtained from external non-official sources.

In other cases, the total data industry value added (IVA) is available from official sources, however, it has to be split to manufacturing value added (MVA) and mining and utilities value added (MuVA):

$$EMVA_t = s_t^{\,1} * IVA_t$$
$$EMuVA_t = s_t^2 * IVA_t \quad \text{where} \quad s_t^1 + s_t^2 = 1 \qquad (2)$$

The notation s^1 and s^2 denote the share of MVA and MuVA in IVA. Data for these shares are obtained from non-official sources.

UNIDO Statistics has carried out several studies on imputation schemes applicable to different data sets. This scheme is gradually evolving into a manual that will guide the entire imputation process using both official and non-official sources. The implementation of an imputation scheme has not yet fully materialized.

5. Conclusion

Non-official data sources are an important part of statistics disseminated by international agencies, however, there is no consensus among statisticians on the content and use of non-official data. The main concern is quality rather than type of data source. It is generally assumed that the methodology applied to produce official statistics is transparent and meets quality assurance criteria set by the national statistical institution. However, the mean of verification of such an assumption is not particularly strong. At the same time, international agencies can only assist NSOs in improving their data, but cannot run their own data collection programme.

Based on experience, UNIDO seeks to maintain the official status of the reported data as best as it can. Non-official sources are used for imputation purposes, thereby improving the quality of data in terms of coverage, timeliness and international comparability.

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Chapter 2.3 The Use of Non-Official Sources for International Food Security and Agricultural Statistics

by Pietro Gennari, Stephen Katz, Carlo Cafiero, Food and Agriculture Organization of the United Nations (FAO)

Abstract: FAO relies on official sources for its statistical work to the greatest possible extent. However, in certain circumstances that are consistent with the "recommended practices in the use of non-official sources in international statistics" as endorsed at the 22nd Session of the CCSA, it is occasionally necessary for FAO to also use non-official sources. This paper presents several examples of how non-official sources are used by FAO in its statistical work and why this approach is necessary and ensures at the same time compliance with the highest quality standards. The paper then focuses specifically on FAO's "Voices of the Hungry" project, an initiative through which FAO will collect data on the extent and severity of food insecurity, through a carefully-designed annual survey to be conducted in collaboration with polling specialists Gallup, Inc. The Voices of the Hungry Project will have a particularly powerful role in enhancing the capacity of FAO to monitor a possible goal on food security and nutrition in the post-2015 development agenda. The survey in fact will cover more than 150 countries worldwide and will allow FAO to publish comparable results on each country every year with a very short time lag, conditions that cannot be met relying on official national sources alone.

1.0 Introduction and Background

The discussion on the discrepancies between national and international data has taken centre stage in the major statistical forums in the last decade. The main reasons that triggered these discussions were the publication of the Human Development Report by the United Nations Development Programme (UNDP) and the annual dissemination of the estimates of the Millennium Development Goals (MDG) indicators in the UNSD official database.

At its 37th session, the UN Statistical Commission approved a resolution which requested that all international agencies avoid "imputation unless specific country data are available for reliable imputations, following consultations with concerned countries and through transparent methodologies"[8]. Subsequently, the 42nd session of the Commission "urged the UN Statistics Division to take a central role in assisting Member States in addressing issues of data discrepancies and consistency with international organisations, paying special

[8] Report on the thirty-seventh session, E/2006/24 E/CN.3/2006/32, p. 2, http://unstats.un.org/unsd/statcom/doc06/Report-English.pdf

attention to issues of consistency of data disseminated by United Nations agencies"[9] and decided to establish a Friends of the Chair group on enhanced coordination of statistical activities within the United Nations system.

On the other hand, on several occasions the CCSA has discussed imputation practices and the use of non-official data sources in the production of statistical series by International Organisations (IOs). This work has culminated in the adoption of the "Recommended Practices on the Use of Non-Official Sources in International Statistics"[10] at the 22nd session of the CCSA.

Building on the recent work of some CCSA members[11], this paper highlights the specific role played and the niche filled by IOs regarding official and non-official statistics and provides examples of how FAO fulfils its own role in this regard. It then illustrates how non-official sources are used to collect data and indicators on food insecurity through the Voices of the Hunger Project[12], why this is necessary, the specific quality assurance mechanism foreseen and the issues and difficulties that are likely to be faced. The paper ends with some overall reflections and conclusions.

2.0 Role of International Organisations in producing official statistics

Even if there is not a universally accepted definition of official statistics at international level, few would contest that data produced, collated, and disseminated by national governments and their agencies, the so called National Statistical System (NSS), are to be considered as "official". This is the case despite the fact that only a limited number of countries clearly define the scope of official statistics and the responsibilities of the national data producers by law.

The role of IOs in producing official statistics is more controversial. The opinion that IOs should limit themselves to just compiling already-existing governmental statistics is still widespread. According to the SDMX Guidelines, on the other hand, official statistics also include all statistical activities carried out "under the statistical programme of an

[9] Report on the forty-second session, p. 14, http://unstats.un.org/unsd/statcom/doc11/Report-Final-E.pdf

[10] http://unstats.un.org/unsd/accsub-public/practices.pdf

[11] "The use of non-official data in imputations/estimations of International Organizations", prepared by WTO for the Committee for the Coordination of Statistical Activities, Fourteenth Session, SA/2009/8 and Sixteenth Session, SA/2010/14. "Best Practices on the use of non-official sources in international statistical series", prepared by UNODC for the Committee for the Coordination of Statistical Activities, Twentieth Session, SA/2012/8.

[12] http://www.fao.org/economic/ess/ess-fs/voices/en/

intergovernmental organization"[13]. This definition is based on the assumption that member states have the opportunity to review and endorse the statistical programme of intergovernmental organizations. In reality, this is not always the case as a number of membership-based IOs do not have a proper statistical governance system.

The role and mandate of IOs with respect to official/non-official statistics has evolved over time. Initially they acted more as a "user" of statistics, collecting processing and analysing data for internal purposes and as a provider of analyses, by subsequently publishing elaborated data within analytical reports. However, the role rapidly progressed to one also of "producer" of data and statistics, on one hand to address the need for harmonization and standardization at international level, and on the other hand to address knowledge gaps present in the national statistical systems.

In the current globalized world, more and more international and national decision making is based also on international sources of statistics. Users rely on international sources to put the national data into perspective and to complement them with additional indicators. In short, IOs add value to official national statistics through the transformation of national data to international "Global Public Goods", provided to users in a standardized and comparable format across countries.

3.0 Reasons for use of Non-Official Sources

IOs normally rely on official sources for their statistical work. This originates from the mandate of the IOs and from the fact that, in general, data disseminated by the NSS are produced according to the highest professional standards. The Fundamental Principles of Official Statistics, adopted by the UN Statistical Commission in its Special Session of 11-15 April 1994, guide the work of the NSS in many countries and several statistical fields.

However, IOs may need to also use non-official sources in order to fulfil their mandate to provide relevant global public goods while, at the same time, meeting user needs and maintaining the trust and credibility in the statistics they disseminate. In particular, IOs cannot only rely on official sources to play their "value added" role at the international level when national official statistics are not available or do not meet international quality standards. Limited financial and institutional resources, especially in developing countries, may prevent the implementation of proper data collection tools by national statistical

[13] SDMX Content-Oriented Guidelines, ANNEX 4, p. 99, http://sdmx.org/wp-content/uploads/2009/01/04_sdmx_cog_annex_4_mcv_2009.pdf

institutions. In some countries, national definitions may differ from international definitions and data produced may therefore not be internationally comparable. In countries where the statistical process is not transparent, government statistics on areas that are highly politically sensitive may not always meet the highest quality standards. Finally, many NSS find it difficult to meet the rapidly increasing demand on the global statistical system for real-time statistics or for data in new areas.

In these instances, non-official sources may offer the only means to bridge the information-gaps left by official statistics. Traditionally, non-official sources are used by IOs to validate official data; to increase their accuracy and comprehensiveness; to improve data comparability and to fill missing values. Less common are the cases in which IOs undertake independent data collections to produce indicators specific to their mission and which are not covered by official national statistics.

In all these cases, the adoption of non-official data should be made by IOs only when all the possibilities of using national sources have been exhausted. In addition, strict and transparent protocols should be applied in order to ensure that non-official statistics used by IOs are of good quality. When using non-official sources the ultimate objective of IOs is to guarantee a greater level and scope of service compared to what is possible to achieve through the use of official sources alone, while at the same time ensuring the highest possible level of quality. This emphasis on the need to apply quality assurance procedures is imperative to reassure stakeholders on the accuracy, reliability and robustness of the approaches adopted.

4.0 Use of Non-Official Sources at FAO

As mandated by its Member Countries, one of the core functions of the Food and Agriculture Organization of the United Nations (FAO) is to "assemble, analyze, monitor and improve access to data and information, in areas related to FAO´s mandate."[14] In view of its intergovernmental status and serving as a neutral platform for Member Nations to access data and knowledge, FAO has both a clear mandate and an inherent competitive advantage to fulfil this vital role in the production of rural, agricultural, natural resource, food security and nutrition statistics.

FAO relies on national official sources for its statistical work to the greatest possible extent. However, in certain circumstances it is occasionally necessary for FAO to also use non-

[14] FAO's Medium Term Plan, p. 12, http://www.fao.org/docrep/meeting/027/mf490e.pdf

official data. The approaches utilized by FAO cover the whole spectrum of the modalities of use of non-official sources by IOs. The examples provided below illustrate how FAO fulfils this responsibility in full compliance with CCSA recommendations on the use of non-official sources. In particular, a corporate quality assurance framework for FAO statistics[15] [16], together with a corresponding implementation strategy and plan, has recently been developed and endorsed by the Organization. This framework provides a tangible and transparent mechanism to demonstrate FAO's commitment to data quality and offers a means to further boost the organization's credibility and reputation in the eyes of Members, partners and the public at large.

4.1 Fertilizer Production, Trade and Consumption

Reliable data on fertilizers are important for many purposes, including medium-term forecasting and national policy planning of agricultural production, as well as analysis and policy interventions related to the environment. The FAOSTAT[17] fertilizer domain employs a supply and utilisation account structure with production, trade, consumption and non-fertilizer use as its elements. The main source is official statistics received from countries. FAO however uses also supplementary data from the International Fertilizer Association (IFA) to estimate all the elements of the accounts. These non-official data are needed to validate official sources; to impute missing country level data; and to compile more complete and comparable regional and global aggregates. A specific problem addressed is the confidentiality of fertilizer production data due to the dominant role, in the fertilizer market of some countries, of a very small number of companies. In these instances, disclosure of fertilizer production data may specifically identify the business activities of a particular company, thereby potentially undermining any competitive advantage. Companies therefore are reluctant to make their data available to the National Statistical System and where they actually do this, it is only with severe restrictions on their use.

In view of the critical role of these non-official sources in constructing representative estimates for the supply and utilization accounts, FAO fertilizer data specialists have entered into a close dialogue with representatives of the fertilizer industry, which has proven to be of vital importance to guarantee a greater level of data reliability before dissemination takes

[15] FAO's Statistics Quality Assurance Framework builds on the "Fundamental Principles of Official Statistics" (UNSC) and the "Principles Governing International Statistics Activities" (CCSA)

[16] http://www.fao.org/docrep/019/i3664e/i3664e.pdf

[17] http://faostat.fao.org/

place through FAOSTAT. Thanks to this cooperation[18], compiling data from official and non-official sources leads to a higher quality FAOSTAT fertilizer data domain that meets the needs of users.

4.2 Early Warning and Emergency Preparedness Needs

The rationale to use non-official sources also includes the need to produce timely and even real-time information for early warning systems, emergency preparedness as well as food aid and agricultural rehabilitation programmes. In this case, FAO resort to non-official data sources in order to collect and compile real-time data. Using official channels and methodology-heavy approaches would simply be too time-intensive to produce results on time for emergency relief operations or early warning alerts. Moreover, developing countries affected by emergencies do not generally have the expertise to establish appropriate and timely data collections.

FAO has established a number of channels through which non-official emergency data are collected. The Global Information and Early Warning System[19], for instance, draws on information from a diverse and broad range of non-official data sources, including news agencies, extension services, and satellite imagery. These non-official estimates are then used to extend official statistical series of production, trade, and use of foodstuffs and are, at a later stage, reconciled with official series. Another example is the price data collection tool pioneered by the FAO Statistics Division for early warning purposes. It provides a platform to collect prices for food, agricultural inputs and outputs on retail or wholesale markets through crowd-sourcing and submit them with their geo-code and in real time to an FAO server. The application has already been tested under emergency situations and is used by a growing number of farmers to find the best prices to purchase inputs and sell products. When sufficiently widely adopted, it can become the basis for a global, real-time and geo-referenced food price monitoring system that enables policy makers to monitor price swings on international markets and their transmission to local settings. It can be extended from a simple price application to a tool that helps gauge the development stage of crops, measure the size of the cropland, predict harvests, or monitor the prevalence and movements of pests and diseases.

[18] FAO has in fact brokered a process where the IFA makes information available under certain conditions, which still allows fertilizer balances at regional level to be estimated.

[19] http://www.fao.org/giews/english/index.htm

5.0 The “Voices of the Hungry” Project as a Case Study

5.1 Introduction

Monitoring food insecurity in a timely, reliable and consistent way worldwide is crucial to help countries and development partners to assess progress in fighting hunger, to establish baselines and targets for hunger reduction and to monitor the impact of policies and programs on food security.

The Post 2015 Development Agenda requires the creation of new indicators of food security, in particular on access to sufficient and nutritious food, that will have to be produced on a real-time, high-frequency and internationally comparable basis. Given the need to also analyse and monitor inequalities within countries, these indicators will have also to be produced for all main population groups and geographical locations. These conflicting information needs cannot be satisfied with national official sources in the short to medium term, in view of the limited statistical capacity of many developing countries, but also because the necessary institutional arrangements are not in place to address these emerging demands. To gather this data, countries would need to conduct extensive surveys based on very large samples on an annual basis, which would not be cost-effective, if feasible at all. In fact, the capacity to produce and disseminate many development indicators is still weak and mostly dependent upon the support or initiatives of IOs. Moreover, from the global monitoring perspective, the surveys will have to be conducted in a methodologically consistent way across all countries.

In order to enable FAO to fulfil its mandate of monitoring food security at the global level and to respond to the need of the Post 2015 Development Agenda, the Organization has launched the “Voices of the Hungry” Project. With this initiative, new data on food security are directly collected by FAO through an annual survey conducted in over 150 countries worldwide. The information gathered permits the measurement of food insecurity from the perspective of the people who experience it directly and personally. This can be done by benefiting from the experience that has been accumulated in the past twenty years on the use of food insecurity experience scales, most notably in the Northern and Latin America. Despite the fact that the methodology is already sufficiently developed, its use has not yet spread to other regions. The main objective of this project is to fill this gap.

5.1.1 Methodology Adopted and its Benefits

Data is collected through a tailor-made questionnaire included in the Gallup World Poll™, an annual survey regularly conducted by the polling specialists Gallup, Inc. in more than 150 countries. It is based on nationally representative samples and respondents are requested to answer eight questions designed to reveal whether and how they have experienced food insecurity in the previous 12 months. The biggest advantage of using this type of scale is that it permits a direct measurement of the severity of food insecurity in a timely and cost-effective way.

The derived indicators will ensure timely monitoring of the prevalence of people experiencing food insecurity for all developing countries in the world on an annual basis, and will assess food insecurity experiences at the individual, as well as household level, thus allowing proper analysis of gender related food insecurity disparities. It can also help to assess emergency needs after a famine or a natural disaster. In addition, it will form an essential component in the FAO suite of indicators, and will ideally, be one of the key indicators of the new monitoring framework of the post-2015 development agenda. It is expected that governments will adopt this indicator for monitoring national food security trends, for targeting interventions, and for measuring the impact of national policy and programme implementation.

5.1.2 Mechanisms in Place for Quality Assurance

Several steps have been taken to ensure the quality of the data collected.

The selection of the data collection service provider has been conducted through an evaluation of existing potential suppliers according to the strict procurement rules of the UN system. Proposals were scrutinized from a methodological point of view and it was confirmed that the proposed sampling approach conforms to international standards.

In order to validate the FIES methodology and to verify that the Gallup World Poll would be an appropriate vehicle for the questionnaire, the data collection was initially tested in four African countries (Niger, Angola, Ethiopia and Malawi) on a pilot basis. Only after having confirmed the success of the pilot, the full-scale data collection started in 2014. As soon as data becomes available, FAO will carry out extensive validation studies to identify a standard universal scale, which can provide measures that are comparable across countries and regions around the world.

FAO maintains full responsibility for the approval of each linguistic version of the questionnaire and has developed the methodology used to process the data. The psychometric model used to obtain the food insecurity measure, in particular, is a strong tool for data quality assurance as it tests the internal coherence of the responses and identifies potential problems in the data collection process.

Technical operations related to translation of the questionnaire, enumerator training and data validation are followed closely by a joint project team composed of FAO and Gallup professionals who meet on a regular basis.

In order to ensure the sustainability of the project FAO has signed an agreement with Gallup Inc. for an initial term of five years. It is also worth noting that in 2011 the World Bank Gallup entered into a similar long-term agreement with Gallup Inc., adding a module on financial inclusion and access to credit to the World Poll. In parallel, FAO will assist countries to include the Scale in their national household surveys and eventually hand-over these functions to them. These efforts will hopefully lead to the establishment of a new-certified standard for food security monitoring that will be adopted by the majority of countries and contribute towards improving the monitoring of food insecurity on a global basis.

Finally, FAO will make all the micro data and the methodology for their analysis publicly available, thus providing an opportunity for all users to review data quality and to test the robustness of the results.

5.1.3 Issues of Potential Concern

At the moment very few countries use experience-based food security indicators like the FIES in their national monitoring systems. One of the possible concerns that these countries, such as Brazil, may have regarding the use of data collected by FAO with the Voices of the Hungry project is that the results may differ from those obtained at national level. In the case of experience-based food security indicators, however, the fundamental homogeneity of the concept of severity of food insecurity, which informs all existing scales (such as the HFSSM, the HFIAS, and the ELCSA), allows an integrated analysis of data collected in different surveys.

Open access to the Voices of the Hungry microdata and to the methodology used to compile the indicators will thus provide the concerned national institutions with the opportunity to

process their data vis-à-vis FAO data, and to make sure that indeed there are no discrepancies other than those which may be due to the different sample sizes.

6.0 Reflections and Conclusions

As described in this paper, IOs fulfil a specific function in the global statistical system as provider of relevant global public goods in the form of internationally comparable data and statistics. They add value to the official data that countries report to them and, under certain circumstances, there are compelling reasons for IOs to incorporate non-official sources in their work. When quality conditions are met, the choice between using official or non-official data (or a combination of both) in the production of international statistics must be based exclusively on professional considerations.

In particular, IOs have a clear role to play in addressing potential information gaps in official sources arising from changes in user-needs. The rapidly changing economic and social environment may require IOs to also play, at least on an interim basis, the role of developing innovative approaches and of directly collecting and disseminating data.

In the case of FAO, the Post 2015 Development Agenda requires the creation of new indicators of food and nutrition security. In order to address this information gap, and in particular in support of the global monitoring function of new food security indicators, FAO has recently launched the "Voices of the Hungry" project. In the short to medium term, NSS are simply not sufficiently equipped to collect the necessary real-time and high-frequency data, which also needs to be comparable internationally.

However, in the long-term it will be far more sustainable to build on and strengthen the existing national institutions, and to eventually hand-over these functions to countries as the result of targeted capacity development initiatives. IOs may therefore need to further prioritize and strengthen their statistical capacity development programme delivery activities at country and regional level.

Specific mechanisms have been put in place with the Voices of the Hungry project to guarantee the quality of its results. The selection of the supplier, the validation and pilot testing of the methodology, the supervision and monitoring of the field operations, the sustainability of the project and open access for all users to the survey micro-data and to the survey methodology provide a quality stamp that can ensure and maintain the trust of users

over time, while meeting their needs in a timely way.

On occasion, the use of non-official sources may create tension between IOs and NSS. Countries may not always agree, and sometimes may not like, the results that emerge, particularly if they contribute to decisions that offer advantages and opportunities for some countries and not others.

Processes and instruments therefore need to be in place to mitigate this tension. In particular there is a need for strengthened statistical governance mechanisms whereby member countries can discuss and endorse the statistical programs of a given IO in advance and peer-review the data before they are published. At FAO, for example, a proposal to establish a Global Commission on Statistics is being considered by the FAO Governing Bodies with the goal of having it endorsed at the FAO Conference in June 2015.

Chapter 2.4 The use of non-official sources in official international economic and financial statistics" The case of the European Central Bank

by Werner Bier and Per Nymand-Andersen, European Central Bank

It is time to align the compass and to look beyond the past

Abstract: Policy-makers and professional users have an increasing demand for comparing economic and financial statistics across countries and regions. This is a trend that has been on the rise following globalisation and has been amplified by the financial crisis in connection with which new policy measures and actions have been established to safeguard the financial system and to re-enforce prudent fiscal and macroeconomic policies. This paper presents the use of non-official sources for official international statistics as part of supplying comparable international statistics fit for policy use. The paper calls for closer cooperation between national statistical institutes and international and supranational organisations with a view to converging towards common concepts and detailed methodological definitions, and demonstrates, via two cases, that international organisations, as a last resort, can use non-official sources to enhance the quality and comparability of international statistics.

Key words: international statistics, methodology, quality, non-official statistical sources, comparability.

1 Common interests within the global statistical system

A feature common to many international and supranational organisations is the collection of statistics from official national sources and the production and release of comparable country-specific and regional statistics as part of serving the international policy-making community.

International and supranational organisations normally follow the "Principles Governing International Statistical Activities"[20], which are aligned with the "Fundamental Principles of Official Statistics"[21] that are widely applied by the national statistical authorities.

International and supranational organisations have well-established "international statistical standards" that specify the relevant concepts and definitions for collecting and releasing internationally comparable statistics. These are supported by "reporting templates", which provide (detailed) guidelines on the methodology to be applied within a statistical field by each of the participating Member States. In cases where all participating Member States

[20] Available at: http://unstats.un.org/unsd/methods/statorg/Principles_stat_activities/principles_stat_activities.htm
[21] Available at: http://unstats.un.org/unsd/dnss/gp/fundprinciples.aspx

supply statistics in line with these international statistical standards and reporting templates, international and supranational organisations are able to produce and release "comparable" international statistics. The international reporting templates are similar to the national reporting templates that that are used by national statistical authorities for producing and releasing national statistics. Although national statistics follow the national reporting templates, they are in many cases not adequately aligned with the international reporting templates. The effect of the mismatch is that international and supranational organisations are releasing less comparable international statistics, reflecting differences – both in the coverage of instruments and in the methodology applied – for identical economic and financial concepts.

This often creates confusion at the national and international policy levels, requiring national and international statisticians to defend and explain methodological differences and – in the best case – to agree on their possible impact. This confusion and resource-intensive activity is a factor that can contribute to reducing the level of users' trust both in national and international statistics and in the institutions responsible for releasing those statistics.

There are good arguments for enhancing cooperation within the global statistical system, focusing on alignments between international and national reporting templates, and/or - where needed - either for national statistical authorities to significantly enhance their metadata descriptions or for international and supranational organisations to adjust the official statistics collected in view of the continuous and increasing policymaking needs (i) for benchmarking and comparing national statistics with those of neighbouring countries; (ii) for multilateral surveillance statistics; and (iii) for regional statistics also in the field of economic and financial statistics.

Many international and supranational organisations are members of the Committee for the Coordination of Statistical Activities (CCSA). The CCSA promotes, among other things, cooperation on statistical programmes and consistency in statistical practices. Its members contribute actively to the development of a coordinated global statistical system that produces and releases high-quality statistics. The CCSA is composed of approximately 40 international and supranational organisations, and the secretariat is hosted by the United Nations Statistics Division (UNSD)[22].

[22] Available at: http://unstats.un.org/unsd/accsub-public/workpartner_ccsa.htm

The CCSA has recently released its recommended practices on the use of non-official sources in international statistics[23], which specify, first, the *raison d'être* of international statistics and their anchoring to the "Fundamental Principles of Official Statistics", the "Principles Governing International Statistical Activities" and the quality assurance frameworks of international and supranational organisations and, second, recommendations, conditions and a consultation process for the ***use of non-official sources in international statistics***.

These recommendations specify, as a rule, that the primary source for international and supranational organisations' statistics is normally official statistics that are typically supplied by national statistical authorities or other sources of authoritative data. These official national statistics feed into the production systems of international and supranational organisations, and the resulting statistics are released to serve the international policy agenda. Similarly, as is common practice among national statistical authorities, there are exceptional cases where the choice of data source is made exclusively on the basis of professional standards, in accordance with the general principles governing statistics. In particular, the recommendations specify that non-official sources can be used:

1. to fill gaps when official statistics do not exist,
2. to improve quality and/or
3. to enhance the comparability of international statistics.

The recommendations also specify a prior and continuous consultation process with the respective national statistical authorities or relevant originator of authoritative data and meeting international and supranational organisations' obligations for documenting the non-official sources.

Before going into possible solutions for minimising the use of non-official sources within international statistics, the subsequent section will provide two case studies demonstrating the application of the CCSA's published recommendations; The first case study covers instances where non-official sources are used to "fill gaps" (point 1 above) and the second case study highlights how the comparability of international statistics can be improved (point 3 above).

The second point of "improving quality" deserves some more attention and elaboration, but is outside the scope of this article. The case would raise the question of the quality level at

[23] CCSA, "Recommended Practices on the Use of Non-Official Sources in International Statistics", CCSA, November 2013.

which it would be warranted for international and supranational organisations to replace official national statistics within statistics from non-official sources.

There may be cases where statistical methods and independent professional competence are required to ensure both a minimum standard of quality and a minimum level of comparability across countries. Such cases could relate to “politically biased statistics”, the figures of which deviate to an unreasonable extent from past and current levels and/or from statistics obtained from comparable private sources.

Within a tight statistical system, quality differences between countries can cause significant collateral damage that would not only affect the particular system involved, but would also spill over to other statistical systems, with reputational losses for all members of the statistical system.

Furthermore, this is amplified by the fact that laymen, users and citizens cannot always be expected to distinguish between good and bad statistics, irrespective of whether it is at national or international level, nor do they have sufficient time to understand and measure the impact of different statistical methodologies. What is clear is that the impact of, and the damage caused by, poor statistics occurs mainly at the national level. Trying to mislead national citizens and other stakeholders in order to prevent them from learning the true facts of democracy is not only likely to backfire at the next election, but it will impact negatively on the general trust in statistics, statistical offices, national governments and policies, with the associated costs that citizens usually incur when having to pay for corrective policy action at both the national and the international level. The next chapter will demonstrate two case studies, where non-official sources are used to “fill gaps” and to “improve the comparability of international statistics”.

2 Case studies on the use of non-official sources in official international statistics

The following section illustrates two case studies where non-official sources are used in international statistics either to fill gaps where national statistics are missing or for adjustment purposes – with a view to increasing the comparability of international statistics.

2.1. Filling gaps – new industrial orders in the euro area

New industrial orders have shown empirically over time that they anticipate business cycle turning points and are monitored by policymakers for precisely that reason. This indicator can therefore be viewed as a "leading indicator" for industrial production within an open economy.

Within the euro area, four Member States have ceased to release national statistics on new industrial orders, and have therefore placed in question the continuation of the production and release of monthly euro area statistics on new industrial orders, which are used as input for the array of statistics used for monetary policy analysis and assessment. Following an exploration and testing phase, a model-based approach was developed to estimate, as far as possible, the missing national statistics as part of the process for producing euro area statistics on new industrial orders.[24] This model uses a mix of qualitative and quantitative data from non-official sources such as the results of the business survey in manufacturing (as released by the European Commission (DG-ECFIN)) and the Purchasing Managers' Index (PMI) on new orders, as released by Markit, and lag variables related to month-on-month growth rates.

Since July 2013, statistics on new industrial orders in the euro area have been produced and released using a combination of official national sources and model-based estimations for missing national series based on data from non-official sources. The series are released monthly on the ECB's website.

[24] Gabe J. de Bondt, Heinz C. Dieden, Sona Muzikarova and Istvan Vince, "Modelling industrial new orders", *Occasional Paper Series*, No 149, ECB, June 2013 (available at: http://www.ecb.europa.eu/pub/pdf/scpops/ecbocp149.pdf).

Chart 1: New industrial orders in the euro area, released using official and non-official sources

Source: ECB, Statistical Data Warehouse.

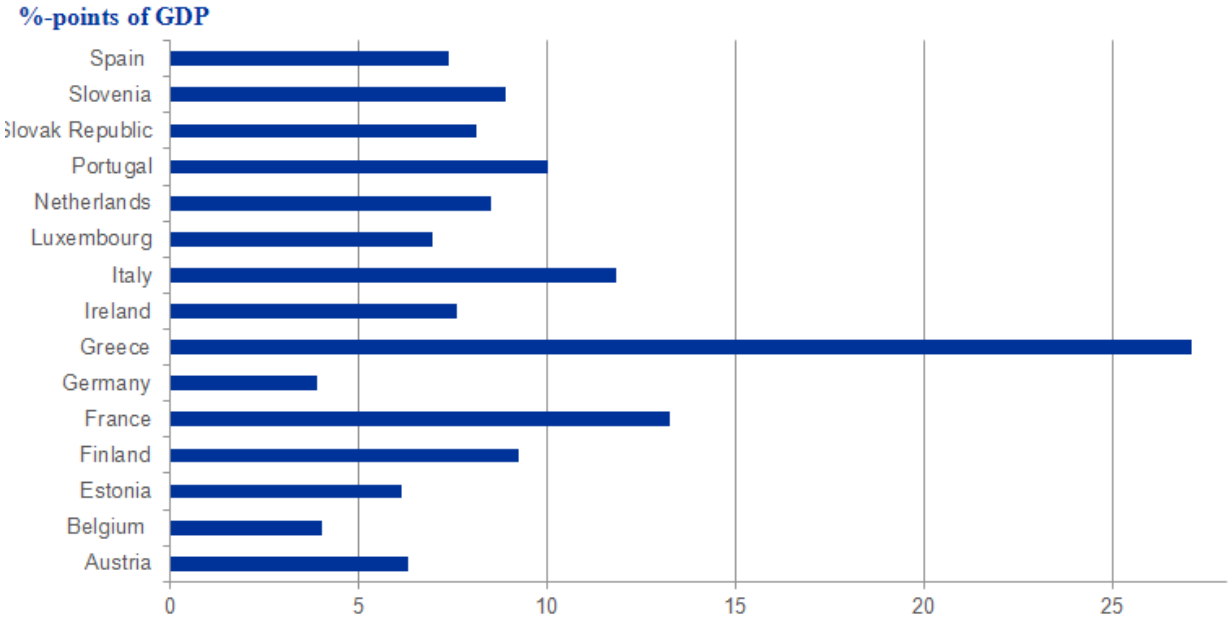
Notes: Base year = 2010; May 2014. Red bar indicates the start of the inclusion of ECB estimations (April 2012). Series released as of July 2013.

2.2. General government debt – improving comparability of international statistics.

The second case is more nuanced and relates to the comparability of general government debt as a percentage of GDP. The general government deficit and debt are core and fundamental indicators used frequently at national and international level and likewise, within Europe, as part of convergence and Treaty procedures and obligations. These indicators receive significant policy attention and therefore need to meet high quality and comparability standards both at national and international level.

According to an OECD study, the general government debt figures released by international and supranational organisations vary considerable. The study compares six renowned sources and reveals that, despite presenting the same concept, several quality improvements in the comparability of statistics are needed.

Chart 2: Government debt/GDP for selected euro area Member States, expressed by the most marked differences between six official sources per country, in percentage points of GDP



Source: OECD calculations; end-2010.

Notes: The sources are data from Eurostat (Government Finance Statistics), IMF (Government Finance Statistics and World Economic Outlook) and the OECD (Economic Outlook and National Accounts at a Glance). The difference for Greece is due mainly to the different evaluation methods applied (market and nominal values).

There are several causes for the differences in these results, **which can only be resolved through close cooperation within and among national statistical authorities and international and supranational organisations**.

The study reveals that there are significant discrepancies between official statistics published by international and supranational organisations.

These relate mainly to differences in:

A. the international definition of concepts (government debt and/or GDP) and instrument coverage (inclusion and exclusion of certain instruments such as trade credits);

B. international methodological guidelines;

C. national methodological guidelines; and

D. completeness of applied national methodologies in accordance with the international reporting templates and their quantitative impact.

Closer coordination and action – on the part of both international and supranational organisations and national statistical authorities – are needed to resolve these discrepancies.

The most intuitive and flexible solution would be for national statistical authorities, as the official sources, to make national statistics available as **building blocks**, whereby each international and/or supranational organisation can select the applicable instruments and associated methodology in line with its respective international reporting template. In this way, each international and/or supranational organisation will publish one set of comparable international statistics that fits its purposes and policy use best.

For instance, within the national building block, the international organisations could take "government debt" per country: (i) to include loans and securities; or (ii) to mean (i) plus securities and others accounts payable; or (iii) to incorporate (ii) plus pension liabilities. Furthermore, the international and supranational organisations could define "debt securities" in terms of the nominal value or the market value and on the basis of, as applicable, the exchange rate method[25] – according to their respective policy use.

This "slice-and-dice" solution would serve users well, as each international and/or supranational organisation could select those relevant concepts and the methodology that is the best fit for presenting comparable international statistics.

Even though this solution may serve best the international and supranational organisations, ***it may be considered to be too costly*** by national statistical authorities, so that its implementation would not be realistic in practice and a more pragmatic and operational solution would be necessary. The following approach might be envisaged with respect to resolving the four reasons for differences mentioned above, each of which would require significant enhancements to cooperation between and among national statistical authorities and international and supranational organisations.

A. International and supranational organisations could enhance international statistical standards by converging to one **common international definition** of concepts. This would require improved coordination among international organisations.

[25] Monthly average, end of month, date of transaction, as applicable.

B. International and supranational organisations could enhance the international reporting templates, by ensuring that the methodological guidelines **sufficiently clarify the methodological choices**, thereby avoiding ambiguity in national compliance.

   The Inter-Agency Group (IAG) was established with this purpose in mind. In the IAG senior managers from the respective organisations are represented with a view to contributing to addressing points A and B above.

C. National statistical authorities could bring their **national reporting templates** into line with international reporting templates. This is important in order to ensure the consistency of national and international publications.

D. National statistical authorities could **document any inconsistency** between national and international reporting templates. Each deviation should be clearly documented, justified and explained, with the national statistical authorities applying their statistical expertise and professionalism to quantify the impact of methodological differences in accordance with international reporting templates.

In the meantime, and until points A, B, C and D have been addressed, there remain cases where there is justification for international and supranational organisations to adjust national statistics by using best estimations and/or non-official sources as part of their efforts to improve the comparability of international statistics.

3 Conclusion

There is an increasing policy need for comparing economic and financial statistics across countries and regions which has been amplified by the financial crisis and the need to safeguard the financial system and to re-inforce prudent fiscal and macroeconomic policies within Europe.

International and supranational organisations are responsible for releasing internationally comparable statistics, and use predominantly official national statistics, as provided by national statistical authorities and by other administrative sources, as input within their production processes.

This paper demonstrates that **national statistics, despite being of high quality** and **in compliance with national concepts and methodologies**, may deviate significantly from one another when used for cross-country and regional comparisons. This is due mainly to inconsistencies in: (i) the definitions of international statistical concepts; (ii) the methodological specifications of international reporting templates and (iii) differences in national and international reporting templates, with deviations and impacts being documented and assessed to an only limited extent at the national level.

This paper provides two practical case studies, where international and supranational organisations are required to use non-official sources either (i) to fill gaps in national statistics or (ii) to improve the comparability of national statistics in the context of producing and releasing official international statistics. With respect to the latter, the paper identifies four main causes of differences, using core government debt statistics as an example, and calls for closer cooperation between national statistical institutes and international and/or supranational organisations in converging towards common concepts and detailed methodological definitions. Two of these differences can be resolved by the international and/or supranational organisations, while the others can be dealt with by the national statistical authorities.

The mismatches across national and international statistics often create confusion at the national and international policy levels, requiring both national and international statisticians to defend, explain and quantify methodological differences and – in the best case – to agree on their impact. This confusion and the resource-intensive resolution activity can contribute to reducing users' trust in both national and international statistics, in statisticians and also in the institutions responsible for releasing the statistics.

Though the case of "improving quality" deserves attention, it is outside the scope of this article. The case raises the question of the quality level at which it would be warranted for international and supranational organisations to replace official national statistics with statistics from non-official sources. There may be cases where independent statistical competences are required to ensure a minimum standard of quality. Such cases could relate to "politically biased statistics". Within a tight statistical system, quality differences between countries can cause significant collateral damage that would not only affect the particular system involved, but would also spill over to other statistical systems, with reputational losses for all members of the statistical system. What is clear is that the impact of, and the damage caused by, poor statistics occurs mainly at the national level. Trying to mislead

national citizens and other stakeholders in order to prevent them from learning the true facts of democracy is not only likely to backfire at the next election, it will impact negatively on the general trust in statistics, statistical offices, national governments and policies, with the associated costs that citizens usually incur when having to pay for corrective policy action at both the national and the international level.

The common factor is that international and supranational organisations and national statistical authorities are all in the same boat and that the enhancement of the quality and comparability should be undertaken by the statisticians themselves, using statistical methods and professional competence for the benefit of both national statistical authorities and international and supranational organisations. If this is not done, policy-makers and advisers or other private sector service providers will adapt and apply their own adjustments, often at the expense of statistical quality, statistical principles and the reputation of statisticians.

It is time to align the compass and to look beyond the past.

Chapter 2.5 "Quality assurance in the global statistical system- the role of CCSA" The case of Eurostat

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Abstract: Although the apex body of the Global Statistical System (GSS) is made up of member states of the United Nations, the International Statistical Organisations, who meet at the Committee for the Coordination of Statistical Activities (CCSA), have a vital role to play in the quality assurance in the GSS. In this paper the authors analyse the factors linked to the quality issues at global level and the role of CCSA in view of new challenges such as the use of data from non-official sources and from new sources in the context of Big Data and the improvement of transparency. A path towards optimising existing resources and assure quality could involve better policies on data sharing, implementation of methodological standards and governance.

1. Introduction

Democratic societies do not function properly without a solid basis of reliable and objective statistics. On the one hand, decision-makers in countries, in local government and in business need statistics to make those decisions. On the other hand, the public and media need statistics for an accurate picture of contemporary society and to evaluate the performance of politicians and other stakeholders. In an increasingly global world, society is showing increasing interest in international statistics; describing international developments that allow comparisons of nations, regions and other groupings. The internet developments have made access to these statistics far easier. Strong national statistical systems have always been needed to provide high quality, relevant global measurements. This need for global measurements is one of the reasons why the global statistical system has a responsibility to develop national statistical systems especially those from developing countries. But it is also a pre-requisite for consistent global measurement is a strong global statistical system. New developments of large relevant data sets becoming available via like big data change the role of national statistical systems and focus on national collected data that are internationally comparable.

What is then the role of official statistics today? '….To provide an indispensable element in the information system of a democratic society, serving the government, the economy and the public with data about the economic, demographic, social and environmental situation…[26].' But maybe with these new data sources the responsibilities of international organisations

[26] Fundamental Principles of Official Statistics; principle 1 on Relevance, impartiality and equal access

might change from coordinating national systems to quality assurance on the international level. The authors will address in the paper the quality assurance mechanisms in Europe at the global statistical system level as well the adaptation to the on-going data revolution.

2. Quality assurance in Europe

2.1 European Statistics

It is essential that users consider statistics to be 'fit for purpose': i.e. relevant, timely and accurate, produced in compliance with principles such as professional independence, impartiality and objectivity.

The ESS quality assurance framework is a standardised, formal Governance System that documents structures, responsibilities and procedures put in place to ensure continuous improvement of data and processes for satisfying users that statistics are fit for purpose. This must apply to the ESS as a whole, including Eurostat. In recent years, the governance of the ESS has been improved, in particular with:

- The adoption of a European Statistics Code of Practice (CoP) in 2005, and updated in 2011,[27]
- The establishment of the European Statistics Governance Advisory Body (ESGAB), in 2009,[28]
- The Regulation (EC) No 223/2009 on European statistics (for short referred to as the Statistical Law),[29] and its on-going revision.
- The Commission Decision on Eurostat (2012)[30].

The ESGAB provides an independent supervision of Eurostat and the ESS as regards the CoP and is the external assessment body to the ESS. Implementation and monitoring of the CoP has relied to a large extent on a self-regulatory approach (self-assessments, peer-reviews and national implementation plans).

The European Statistics Code of Practice builds upon a common European Statistical System (ESS) definition of quality in statistics and targets all relevant areas from the institutional environment, the statistical production processes to the output: European statistics.

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27 http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-32-11-955/EN/KS-32-11-955-EN.PDF

28 http://epp.eurostat.ec.europa.eu/portal/page/portal/esgab/introduction

29 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:087:0164:0173:en:PDF. At the time of drafting of this article an amendment to this regulation was in preparation. The amended regulation was adopted in 2015.

30 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:251:0049:0052:EN:PDF

The quality assurance framework[31], based on the Code of Practice standards for statistical processes and outputs, identifies different practical methods and tools which national statistical offices can use to implement the Code of Practice, and which are appropriate to their organisational environment. Examples are: the use of service level agreements with the owners of administrative data, procedures for consultation with users, a public policy on how data are released, and so on.

The quality assurance framework is an important reference document when compliance with the Code of Practice is being assessed –either through self-assessments in statistical offices or through external assessment such as peer reviews. A second round of peer reviews for the ESS (Eurostat and Member States National Statistical Offices) has been launched at the beginning of the year and will continue through 2015.

Another building block of quality in European statistics is the Commission Decision adopted in September 2012. Through the Decision, the Commission pledges to uphold the independence of Eurostat and its Director-General in their tasks, and ensure that high-quality standards are respected for European statistics. The credibility of statistics relies on their impartiality, objectivity and freedom from political interference or influence. The independence of statistical offices is therefore of paramount importance.

The ongoing revision[32] of the statistical law (223/2009) aims to tighten up the key regulation on European statistics to ensure that statistics are developed, produced and disseminated in an independent manner, free from any pressures from political or interest groups, regardless of the existing institutional settings. The proposed regulation on European statistics (at time of drafting still under discussion, adopted in 2015) also indicated provisions for "Commitments on Confidence in Statistics". These would provide a way of formally committing national governments to adhere to the Code. They should be signed by the government at the highest level and would identify specific actions within the governments' responsibility, which are aimed at improving compliance with the Code according to agreed deadlines for implementation.

Eurostat is in charge of coordinating statistical activities within the Commission, to ensure coherence and comparability of European statistics. This coordination, along with closer cooperation between Eurostat and other Commission services on statistical matters, will ensure a better reaction to future challenges. Eurostat is responsible for monitoring and assessing the quality of data that it collects and receives from the national statistical systems, and for verifying data in the context of the EU's enhanced economic governance. It also

[31] http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/QAF_2012/EN/QAF_2012-EN.PDF
[32] See footnote 29.

monitors the implementation of the European Statistics Code of Practice at national level. To secure public trust, a process of labelling European statistics, so as to distinguish them from other statistics, is promoted.

How do we label the statistics we publish? Not all statistics can have the same intense level of validation and scrutiny that needs to be applied to government finance statistics, for example. For the majority of European statistics, it is sufficient to ensure a harmonised approach to the production of European statistics with suitable validation and agreed methodologies, in line with minimum requirements that can be derived from the Code of Practice.

2.2 European versus other statistics

In the framework of the Commission Decision on Eurostat[33] Eurostat has developed, within the European Commission, memoranda of understanding with the client DGs aiming at formalising Eurostat's commitment to deliver better targeted support and to coordinate "other statistics" produced by the Commission.

The Commission Decision of 17 September 2012 on Eurostat establishes the distinction between "European" statistics produced by Eurostat and "other" statistics produced by other Commission Services. Concerning the latter, the main role of Eurostat is to coordinate their production though a planning exercise and to provide guidance, appropriate training and expert services to other Commission services. For example, Eurostat provides methodological support to Commission DGs along the different stages of statistical production process (e.g. on sample design, sample size and accuracy).

There is also another group of statistics, statistics which may be under development and which are reliant on data sources whose characteristics are in some way distinguishable from the harmonised, well-established data collections.

Is there a quality labelling function for statistical offices with this type of statistics? Within the European Commission, there are several DGs that are currently examining the potential of Big Data for their respective policy area. DG CONNECT for example is in the process of developing a Big Data platform in Horizon 2020; this initiative alone will require co-ordination and collaboration of more than 15 policy areas.

The moment the use of Big Data sources for the production of official statistics and indicators for public policy gains ground, it is inevitable that some kind of a "certification" function

[33] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:251:0049:0052:EN:PDF

needs to be installed. . It is not clear whether such a function should be assumed only by NSIs, by international organisations or by a multidisciplinary body but irrespectively of that, NSIs should be key members of such authorities. Official statistics will continue to be important for benchmarking — to provide a value against which alternative estimates can be periodically compared — and to support the development of appropriate big data models.

Eurostat is reflecting on how to assure the quality from these other data sources in the future as these data sets will be proportionally more and more important in the production of statistics and in the context of rapid IT developments.

3. Quality assurance in the Global Statistical System – the role of CCSA

To ensure a statistical system which operates more smoothly and to allow the system to tackle even newer events, it is expected that some elements have to change over the medium and long term. In his article "future developments in the global statistical system"[34] Pieter Everaers pointed out five elements, one of which being: Improved transparency and a strengthened assessment of quality.

The authority and credibility of statistics has become a main issue with increased emphasis on evidence based policy making. Transparency on methods used, quality, and meta information are needed to guarantee this credibility and authority. A self-regulatory system of norms and values based on a commonly agreed set of principles and operationalised via a quality framework is essential for maintaining credibility. Examples are the Principles Governing International Statistical Activities[35] and the European Statistics Code of Practice[36].

The principles governing international statistical activities are an important advancement on how international statistical agencies should operate. For legal reasons, some international agencies could not formally endorse the Principles but latter should have a major influence on the way the former operate even if not formally adopted.

The first principle is that high quality international statistics, accessible for all, are a key element of global information systems. Other principles emphasise the importance of impartiality, professional standards and the transparency of concepts, definitions, classifications, sources and methods. There are a number of other important principles and if they were followed by all international agencies we would have a strong global statistical system.

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34 Statistical Journal of the IAOS, Journal of the International Association for Official Statistics, Volume 25, Numbers 1,2, 2008, page 73

35 https://unstats.un.org/unsd/methods/statorg/Principles_stat_activities/principles_stat_activities.htm

36 http://epp.eurostat.ec.europa.eu/portal/page/portal/quality/code_of_practice

AT a global level, the United Nations have recently developed a quality assurance framework at global level, which takes into account the experiences of quality frameworks in the European Union. There is also the work of the High Level Group concerned with business architecture in statistics, which is looking at how statistical production systems can be reengineered to be more efficient, using methods and tools that can be shared within a modular production environment.

What is the role of the CCSA in implementing a global quality assurance framework?

The CCSA can play an increased role within its sphere of influence to increase coordination and support towards a stronger leadership in the GSS and more specifically in facilitating the adherence to the quality principles and respect of guidelines on quality assurance of which the recent guidelines on use on non-official data sources are an example.

As mentioned previously on European statistics, in the future other data sources will play and increased role in the production of statistics at global level which poses specific challenges to ensure adherence to a common quality standards. On the global level there will be room to mirror the European experience with the development of a quality framework and other tools to this wider context, also in the context of the new data sources that do not stem for the National Statistical Systems.

The CCSA has to reflect on commonly used big data sets. What is the role that CCSA wants to play? What are the quality requirements for Big data outside national statistical offices?

International organisations in the CCSA such as UNDOC, FAO, UNIDO, and WTO have experience in the use of non-official data sources.

The issue is by using other data sources statistical offices and international organisations will no longer master data collection but still need to assess the fulfilment of quality requirements. There is thus room for the CCSA to act as a body in quality checking and audit aspects, promoting the quality standards and translating quality standards to enable them to be applicable in other environments. Will CCSA play a role as a forum where members will inform the other on the quality of big data sets that are used by each organisation? Is there a role for CCSA as an international quality assessment coordination committee: from CCSA to IQACC?

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