Factors and principle measures influencing credibility and independence of official statistics (under Conditions of the Transformation of Statistics)

Introduction – On the Principles of Integrity, Independence and Credibility of Official Statistics

Principles of integrity, independence and credibility of official statistics are basic principles that must be respected **in the interest of accomplishing the mission of official statistics**. Statistical data can only be used and serve their purpose adequately in situations where these principles are inherent to the statistics.

The mere fact that official statistics (or its workplaces and statisticians) abides by these principles does not suffice. Recognition and observance of integrity, independence and credibility principles on the part of statisticians are **a necessary, but not sufficient condition**. **Perception of statistics by society** official statistics renders its services to is also a decisive factor. Respondents and users of statistical data, media, politicians and taxpayers must believe that statistics is independent and does not favour specific interests and that the behaviour of official statistics is governed by approaches that ensure its maximum objectivity. The users must also be convinced that statistical data reflect reality and that statisticians know their business in both theory and practice and provide good data. Only under such a situation is there a corresponding interest in statistical data and associated services.

Integrity, independence and credibility are **principles that are not standing isolated** from one another - they are closely interrelated. Respecting requirements for integrity by statistics also implies that statistics is independent and strives for quality of its products, which is not compatible with any undue influences whatsoever. Integrity and independence can thus be taken for prerequisites of credibility. Factors that affect the individual principles then exercise their mediate effect on the application of other principles, too, and influence the sphere of the use of statistics in consequence. Also adopted measures show themselves in a rather wide extent and favourably affect the general attitude of society to statistics.

We can talk about **development in a spiral** – the integrity of statistics and applying the independence of statistics have an impact on its credibility, which in turn affects the independence and quality. Where respondents trust statistics, they provide true data and such data further increase the quality of produced and published aggregates. Users, who also include many a respondent, can trust and work with such data and usually respect the reporting duty in the framework of statistical surveys as well.

An **ideal situation**, when the principles of integrity, independence and credibility are interpreted in the same manner and respected in a given environment, can be seen as a certain **vision** very difficult to implement in practice absolutely. We will always come across users that are dissatisfied with the choice of statistical indicators or particular statistical data, do not trust statistics and suspect statistics of serving particular interests. There will always be respondents hesitating to provide data for the fear that the data might be used for other than statistical purposes and not for calculations of final statistical aggregates only. These reasons can be various, on the part of statistics and environment in which statistics occur and whose organic component statistics is. They may include ignorance of statistics, bad experience from the past, and also limits of official statistics brought about by the very essence of this modern discipline.

Apparently, the principles of integrity, independence and credibility cannot be perceived black and white and simplified: the **extent to which these principles are lived up** to varies, depending on the environment in which statistics implements its mission. The main factors include first of all objectively given socio-economic conditions, including legislation which that always correspond to a given phase of historical development. Respecting demographic principles in society in this context is sure to be a key factor.

The actual application of these principles under given conditions is also dependent on the statistical service. The statistical service has to have an active role to play and to initiate particular legislative and practical measures in order to function properly. With regard to the general validity of these principles and the essence of statistics considerably grounded on international comparability also due to the effective sharing of common procedures, it is essential to rely on **common standards**. Undoubtedly, **Fundamental principles of official statistics** that came into being 10 years ago to help the state statistical services in the countries undergoing the process of transformation play a key role in this context. Fundaments for the functioning of official statistics were condensed into ten basic principles also including the principles we are discussing today. The very existence of and adherence to the Fundamental principles were often a cogent argument when new statistical legislation was in making under the conditions existing in the countries under transformation. In this connection, extraordinarily interesting pieces of knowledge surface when applications of these principles are compared for different socio-economic conditions in the countries which were through eventful historical development in the last century.

Mission of Statistics as Affected by Socio-economic Conditions

Various demands were laid on statistics in various stages of this development. The extent and contents of the indicators were altered and changed, as were the methods used, but first of all the **mission of official statistics itself was developing**. The primary task of a planned economy was to monitor the fulfilment of the plan for the needs of state authorities – the use of statistical data by a wide spectrum of users was heavily curbed by a minimum chance of individual entities to be involved in decision-making. Drawing up plans and controlling the plans for fulfilment used individual data in particular, and **the circle of real data users was much limited**. Close cooperation of **planning** and statistical **authorities** was based on the legislation of that time - the socio-economic information act that pooled operational records, calculations, statistics and planning into one system. Under such a situation some doubts about unbiased functioning of statistics were arising. However, impartial view of statistics and statistical data were doubted less than the objective preparation and quality of plans. The principal data user – the State Planning Commission – dealt with possible objections to the work of statistics flexibly and in routine working contacts. Nevertheless, other users often differed in opinion and, logically, the question of possible influencing and falsifying statistical data in the interest of publicizing what the only political party accomplished in its leading role was arising. Interestingly, the suspicion about the falsification of statistical data under our conditions was not confirmed (by a study made in the early 1990s). According to available information, though, this is not any general experience as the misuse of statistics under similar conditions did occur in some countries.

The situation concerning the use of statistics is quite different in a **market economy and democratic society**. Data are important for **many entities** that use them in their decision-making process. Statistics are employed to make decision or assess the success of schemes at various levels. Today, the need to follow the principles of integrity, independence and

credibility arises from competitive environments and requirements of more numerous actors. Different interest groups have different intentions, expectations and hypotheses of their own which they manage to materialize more or less successfully.

In both cases it is imperative for statistics to **describe facts truly** using appropriate and recognized methods, irrespective of whether or not more or less users will like the resulting value of aggregates or indices and irrespective of whether the result will affect them positively or negatively.

Changes in Methods Employed within the Framework of Official Statistics – Statistics Becomes the "Art of the Possible"

The changes in conditions and thus also the view of statistics affected **statistical approaches**. In the era of planned economy, the number of businesses was rather small to plan and control the economy (about 27 thousand), which also affected statistics. **100% statistical surveys** (censuses) were run almost in all cases without the necessity to gross up sample survey results to universe. There was no non-response and thus no need to impute missing or even erroneous data. **Data audits** conducted by the statistical office **in businesses** to check the businesses for compliance with statistical methodology, including the link to operational records, were a routine part of the statistician's work. In state-owned enterprises, planned economy conditions ensured sufficient capacity for administrative activities, designing of statistical questionnaires included. Sophisticated estimation or modelling methods gained little ground though certain expert guesses made by respondents were used for compiling flash monthly data reports released with a minimum delay after the end of reference period. No wonder that statistics were frequently considered to be "accurate sums of inaccurate figures".

Practical implementation of today's statistics is totally different. Data collection (unless administrative sources are available) is based on **sampling methods**. **The respondent-statistics relation is based on confidence**. Of course, this approach does not permit making any internal checks in connection with records though collected data are checked for correctness (especially with regard to consistency and completeness) or such checks can be run in the case of electronic data collection by respondents. Implementation of statistical surveys is much more demanding and based on advanced ideas of statistics and adequate methods. It would not be possible today to ask all of the businesses we have in our register (over 2 million) to be our respondents even in annual surveys. Some refuse to complete the questionnaire outright, others complete it in part or incorrectly. Dealing with non-response thus became another task statistics had to cope with. A frequent argument of respondents is (i) enormous burden and (ii) in small businesses, high costs of providing requested statistical data.

Demands laid on statistics have grown enormously. **Statistics have ceased to be the "accurate sums" to become the "art of the possible"**. So not only staff of statistical offices and other people engaged in the state statistical service have to get accustomed to the new form of statistics, but also all users in particular. Ignorance of statistics and of statistical methods and approaches poses great danger under this situation. Apprehensions of citizens concerning sample survey and their results are one example of many. Large variability of data (compared to the previous rather levelled-out data) raises strong doubts about the popular averages frequently used before in particular. A number of people, and often of businessmen and politicians, also find it difficult to get their bearings in statistical data and most of them

learn to use the data gradually. This transformation is a demanding process of rather long duration whose reduction is inconceivable without active approach of statisticians.

Statistical offices also had a lot to learn, frequently from errors. For instance, the error made in the Czech external trade data for the fourth quarter of 2002 was produced by shortcomings in the processing of administrative data at the Directorate General of Customs. The Czech Statistical Office (CZSO), which took over and published the figures, had anticipated no problems and underestimated the need to look into the individual figures in detail. So the error that caused an unusually high difference in the GDP development figure considerably undermined the credibility of the CZSO. It took quite a long time after this event for the CZSO to dispel the fear that statistics provides data that are incomplete and inferior. And we have learned our lesson from what happened: credibility of statistics is a delicate matter and in-depth checks of administrative data sources must become an integral part of our work, which it did.

Using administrative data sources can help statistics significantly to reduce burden of respondents. Under our conditions we had to cope e.g. with the issue of **access to these administrative sources**, particularly where other legislation (on banks or taxes) prevented us from using them. Different needs of administrative sources from the point of view of contents or deadlines, or availability of such sources for certain periods of time, led to a rather low utilization of the sources. For instance, tax returns served formerly for tax revenue offices and were virtually inaccessible to statistics, which sizeably reduced even the mere identification of active and inactive entities for statistical surveys. It stands to reason that this affected the quality of data, size of samples and burden of both statistics and respondents on the one hand and produced doubts about the work of statistics and suspicion of double counting when data were collected in the framework of state administration.

There is another case that concerns the **statistical service – administrative data sources relation**. Being sometimes encountered it is evidence of certain inertia of the previous regime's practices. The one-sided relation with statistics taking over administrative data sources, including confidential data, does not apply in the opposite direction – i.e. to the take-over of statistical data. This primarily goes for some representatives of ministries within the framework of which state statistical service workplaces are established, as it is difficult for them to realize that data collected for statistical purposes by the state statistical service inside the ministry cannot be exploited for other administrative needs. It is necessary to do explaining and arguing that the protection of confidential data and respondents and also confidence in the behaviour of statistics must be preferred to efforts for maximum uses of data. Solutions, if any, arrived at in such a situation must in no case violate the principle of confidential data protection on the part of the statistical service.

Data confidentiality. Protection of confidential data is a significant element that distinguishes between the behaviour of statistics in the two periods. In the planned economy collected data were used in their individual forms mostly by a small circle of users; in spite of the fact that aggregated data were available, they were used to a much lesser extent. Today, confidential data are protected and aggregates (including estimates) are available to a wide spectrum of users and are used by them.

The above-mentioned approaches necessitated **amendments to statistical legislation** the behaviour of statistics is based on. The existence of the specific state statistical service act, independence of statistics, individual data protection, timely publication of the programme of statistical surveys for respondents to prepare respective records, availability of statistics to a wide circle of users, and the use of advanced statistical approaches have become new attributes of the state statistical service. By these new principles and especially by close

adherence to them, the state statistical service confirms changes in its mission and behaviour that focuses on effectiveness and respecting rights of respondents and needs of users.

Logically, these approaches and high quality of data are tightly related. Where behaviour to public is clearly defined and rules and regulations observed, where the **data** provided meet requirements for quality, statistics gives out unambiguous signals to public. This **consistent attitude of statisticians** is a challenge to the surroundings to follow suit. And vice versa - hardly can respondents trust statistical data if statistics does not abide by these principles and approaches in its declarations and behaviour. In such cases, the reaction of respondents and users comes back to statistics and negatively affects the quality of input data obtained in statistical surveys. Similarly, attempts at discussions with users also lack the element of openness and common interest, when even efforts to raise the quality of statistical data are very problematic.

Consistent observance of the mentioned rules is vital for the successful operation of the state statistical service. However, you must **know the rules** first in order to observe them. Educating and training themselves and the surroundings – familiarity of these principles – are at the very beginning of all activities. For statistics, however, the subject of education or discussions is usually science, indicators and methods. Textbooks and lectures at universities have also mostly little to say about basic findings on fundamental principles and their significance for the work of official statistics. This is why **cooperation with universities** and their teachers is needed in an effort to better understand the work and mission of the state statistical service. Students already use statistical data today and soon they will exert influence on many decisions. Interventions in education are possible on the basis of a two-way process which assumes participation of experienced statisticians in education and their involvement in university bodies on the one hand and, on the other hand, similar involvement of university teachers and representatives in activities of the state statistical service in the interest of getting inspirations for needed enrichment of statistical education. In this context, undoubtedly, the education also includes enlightenment of public - i.e. providing similar **information to public** on various occasions and in various forms (articles, information on basic principles and rules at meetings with respondents, stressing the issue of the protection of individual data on questionnaires for respondents, etc.).

Basic demands laid on statistical activities in the framework of these efforts include **transparency and openness** that appear in an effort to make statistical data and other information accessible. Confidence is always based on knowledge and in the case of statistics – in the situation of implementing of principal changes - this rule applies **twice as much**. Needed meta-information which characterizes provided data in more detail and also all other documents which illustrate activities of official statistics should be published, brought attention to and explained where necessary; for required comprehensibility and availability of data belong to key attributes of the quality of data.

All **activities leading to better quality** of statistical data, procedures or management are organic part of the process that helps improve the credibility of official statistics. Pilot surveys run to verify planned actions before full-scale surveys are begun and, similarly, follow-up quality reports and audits in individual domains of statistics make it possible to carry on the process of statistics quality improvement. Involvement of public, both respondents (in pilot surveys) and users of statistical data (in audits), is an important aspect. It is also a clear signal of statistics testifying to the efforts of statistics as to openness, mutual dialogue and cognition.

This approach arises from the fact that the frequently mentioned concept **quality** should not be understood absolutely. The definition of quality itself suggests that the assessment or measurement of quality is based on comparing and fulfilling needs. Hence, to know the needs

of users is the initial step for subsequent actions of statisticians who must take account of conditions of their own and possibilities of respondents when designing statistical surveys – still one of the key methods of getting statistical data. Here, another important motto **"less implies more"** comes through, perhaps more often than in other areas. Well-though-out methods of data processing, including sampling methods and estimations, permit addressing less respondents in comparison with exhaustive surveys and simple procedures which are commonly used and burden respondents more than necessary. One should be careful, though – rather small samples and estimates that follow call for unusually good quality of input data from respondents and for responsibility and willingness of respondents to provide correct data in time. We strive to move from the former "accurate sum of inaccurate figures" to "estimates or **calculations based on accurate figures**". By doing so we save resources of statistics and even respondents in consequence, too. This vision with its parameters set in a optimum way, with respondents believing in statistics, and with needed and effective roads to walk along is not certainly any easy and short-term matter to materialize.

To interrelate timeliness and accuracy and to define a **revision policy** is a new **optimization task** that has a role to play in the efforts to raise the quality of statistics. Our hitherto experience and comparisons of practice and experience of other statistical offices suggest that the approach of users to revisions differs not only in countries which were through different historical development, but also in different parts of the world in particular. While in the U.S.A. the revision implies usual updates of the estimates provided before, each revision under our condition is accompanied by apprehension of users which often see it as a means of correcting erroneous data and sometimes as evidence of the statistician's bad work. In the past, users were used to the sum of monthly absolute data corresponding accurately to the information they received for a quarter or year, today they have to get accustomed to the fact that statistics provides mostly information on development in the form of indices during the year, making it more accurate and revising it when the respective year is over. This, too, generates respondents' concern about correctness of data and doubts about the functioning of state statistics.

State Statistical Service as the Key Element and Initiator of Changes

Acquiring knowledge and experience gradually is an extraordinarily **demanding process** for **state statistical service workplaces**, too. To change the character of work principally, influence the qualification and structure of the staff, strengthen methodological activities with focus on raising the share of statistical mathematical methods, make changes in the dialogue with users and respondents, and change the preparation and implementation of statistical surveys – such **radical transformation** statistics has not yet experienced under our conditions at all. Compared with the past, the newly drafted statistics lays much greater demands on the qualification and quality of the staff (which does not include expertise and command of languages only) and on creative and critical approaches, much higher personal responsibility and higher communication skills.

Communication with all actors concerned with the production and use of statistical data, which are potentially the whole public surrounding statistics, is among basic activities involved to improve the quality, integrity, independence, and credibility of statistics. The measures statistical offices take to strengthen these principles in their activities must include activities targeted at individual groups of these actors. Under such marked changes that affected our statistical service, identifying needs and opening the dialogue to follow, be that with respondents, users, universities or media, are fundamental.

Internal communication within the office, including established rules and standards which are also related to **external communication** (e.g. for publishing of statistical data in accordance with our release calendar), is also fundamental. Similar standards must apply to the whole state statistical service which is coordinated by the statistical office. Cooperation with universities and involvement in educational activities primarily concern dissemination of basic knowledge about basic principles of the functioning of official statistics in democratic society.

The state statistical service usually instigates communication with other actors, too. We have very good experience of users and respondents' reactions. Based on the first **enquiry into satisfaction of users** with CZSO-provided statistical data, conducted in the second half of 2003, modifications to our internet pages and some other adjustments to the publishing system were made. This year's **enquiry into satisfaction of respondents**, to which over 800 people responded in its first week, brought a number of interesting observations for further use. Thanks to the working dialogue, agreements on cooperation with professional association and **regular meetings with representatives of major users**, media and political and public spheres also expand the awareness of statistics and of its functioning.

International cooperation is an obvious part of these activities. It should be seen not only as involvement in activities of international organizations or in bilateral cooperation, but also as penetration of international regulations and standards into internal activities of NSIs. For national application, internationally recognized principles constitute a great support for both the overall functioning of state statistics ("Fundamental principles of official statistics", standards concerning quality, meta-information, etc.) and **all standards** with a multiple role to play. They improve comparability of statistical data in particular, help make statistics transparent and **contribute to perception of statistical independence** (e.g. they reduce the fear that the contents of indicators could be adjusted to particular interests).

Conclusion

Accomplishing the principles of integrity, independence and credibility in practice is a long-term challenge to statisticians. Efforts of all statistical offices and international organizations directed to a higher decree of the respecting and recognitions of the principles are essential for the work of statistical offices as well as the fulfilment of the actual meaning of official statistics.

The situation is made rather difficult in countries that were through dramatic historical development. For in the short run, the principal changes, which entered official statistics and are very progressive and vital for the operation of advanced statistics based on democratic principles, **diminished the confidence** of certain groups of respondents in statistical data for some time. **This paradox is an inevitable price to pay** for these changes and requires that statistical offices concentrate closely on necessary public-aimed activities within the office and the statistical service itself and on exchange of information on an international scale.