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Theme 1

The need for more timely information versus reliability and international comparability

Invited Paper submitted by the Federal Statistical Office of Germany[1]

Abstract:

The requirements of reliability, international comparability, and timeliness are various aspects of the quality of statistical data. These quality characteristics do not always have the same importance. For structural data, timeliness has a different relevance than for short-term economic statistics. Another important factor to be considered for the trade-off between timeliness and reliability is the purpose the data are to be used for. Due to the conditions of production, improving timeliness without impairing reliability is hardly possible. Reliability must never be replaced by timeliness where reliability is what really matters. However, there are purposes which do require a gain in timeliness and can easily cope with the resulting loss in reliability.

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This paper expresses the author's personal views. They do not necessarily reflect the policy of the Federal Statistical Office.

I. Introduction

1. One of the consequences of technological progress is that our world is moving together ever closer and ever faster. The inventions of radio, telephone, television, and communications satellites were milestones on the way towards an ever more transparent and better informed world. The recent development of the Internet again has dramatically accelerated that process. It has been a technological leap whose real importance for man cannot be assessed yet. In the next century it will perhaps be considered to have been an informational revolution. Information society, globalisation, and international benchmarking are terms describing that development. What is the position of statistics here?

2. Where the goal is to describe and assess the social, economic, and ecological situation of countries and nations, statistical information has top priority. However, it is not just any statistical indicators that is needed worldwide in this context; what is required is data that are comparable at an international level and that are highly reliable.

3. The question we are dealing with here is: May we attach greater importance to the timeliness of statistical information in the future than to other requirements of statistical data?

4. It is not possible to give a general answer to that question. The answer will rather depend on the type of information, the purpose such information is needed for, and the users demanding the information.

5. So, first of all, I will try to illustrate for what type of statistical data timeliness is especially important. Then I will examine who the users of rapid information are and what the issues are for which data are needed very rapidly. This will include the question of whether there are differences between national and international use. Finally, I will go into the questions of whether modifications in the process of producing statistical data may provide significant gains in timeliness and where are the limits in the trade-off between timeliness and reliability.

II. The type of statistical information

6. The production of statistical data should always be based on the principle of maximum reliability and earliest presentation possible. When talking about reliability and timeliness of statistical data problems do not arise to the same extent for the entire supply of data. We have to distinguish and specify the type of data we are dealing with. There are good reasons to assume that the demand for data quality and the possibility to change it are not the same for short-term economic statistics on the one hand and structural statistics on the other. There are differences both concerning

the production process and with regard to the relevance of timeliness and reliability.

7. First of all, I would like to go into the issue of relevance. In section 5.1, I will examine the production process.

8. For statistics that are compiled at long intervals, the demand for timeliness is not a top priority. Structural data do not change quickly, so that for their publication a tolerance of several months is absolutely acceptable, that is, referring to the date of publication envisaged. This means that the decisive element is not the absolute difference in time, but the actual date of publication in relation to the theoretical date of publication under ideal conditions. It must also be taken into account that structural data have a rather great potential of information, which can be utilised to its full extent only by analysing the data. However, this takes time and, moreover, such analytical work is not always performed by the data producers themselves. Consequently, the demand for timeliness puts pressure not only on the data producers but also on those who are responsible for further processing, thus reducing pressure on official statistics.

9. Another reason explaining why the demand for quicker presentation of results is not of the same importance for structural data as for short-term economic statistics is that structural data are often very detailed in terms of subject-matter and regional breakdown. This means that their production is quite costly and, consequently, there are no competitors offering the same data. Thus there is hardly any alternative on the market for statistical information of this kind. Nevertheless, the timeliness of structural data must not be disregarded altogether, because timeliness will always be an element of the overall quality of statistical data; considerable shortcomings of this quality element would have a negative impact on the image of the data producer.

10. When having to choose between reliability and timeliness of structural data, the decision will thus probably be in favour of reliability. Therefore, a gain in timeliness will hardly be obtained by reducing reliability.

11. Therefore, the demand for more timeliness is not very relevant for structural statistics. This is why I will focus my reflections regarding timeliness on short-term economic statistics.

III. The relevance of timeliness for whom and for what purpose?

12. Producers of goods and services have to meet the requirements of their customers if they want those customers to continue demanding their products. This principle of a free-market system also applies to producers of statistical data. But what does this actually mean for data producers? Is that demand applicable in any case, or are there situations where we cannot or should not satisfy the users' wishes?

13. Who are the users, and what are the purposes they need the data for?

III.1 The users

14. Obviously, we have to differentiate very much when examining the issue of users' wishes - which are reduced here to the three items of timeliness, reliability and international comparability. Who are the users of short-term economic statistics?

15. Official short-term economic data are used first of all by national and international public institutions (governments, central banks, the World Bank, IMF, OECD, UN). The second group of users - which I find it hard to further subdivide in terms of priority - are the business world with its associations, employees' associations, the scientific community in the broadest sense and, last but not least, the general public, which is represented above all by the mass media. Especially the latter group of users is in my opinion not paid enough attention regarding the issue of timeliness.

16. Users' wishes for timeliness, reliability, and international comparability appear to be homogeneous at first sight only. It is true that all users wish good quality of the data, that is, they wish to obtain the data as quickly as possible, with a high degree of reliability and, where necessary, comparable at an international level. However, if one analyses these demands and asks the users to set priorities, the picture becomes more differentiated. Depending on the purpose the data are needed for, there is more emphasis put on either reliability and comparability or timeliness. Journalists will set other priorities than central banking experts or analysts at the International Monetary Fund.

III.2 Data use

17. When it comes to assessing the relevance of timeliness of statistical data, the question of what the data are needed for is of major importance. The purpose of data use in my opinion is even more important than the issue of who the data users are.

18. As mentioned earlier, the demand for better timeliness is not very relevant for structural data. Obviously, there are questions that can most easily be answered by structural data. This kind of use will apply first of all to the scientific sphere (universities, research institutes, medium and long-term political advice, international comparative studies), but also to business and employees' associations.

19. For example, an entrepreneur will carefully consider a decision as to whether to make a substantial investment in another country. This is not a matter of quick decision but of the right choice. The underlying information must be precise and the data must be comparable. Also, when considering the granting of a loan, the IMF will not base its decision on the timeliness of a

short-term economic indicator. In most cases, both of these users will probably rate reliability and comparability higher than timeliness. For these purposes, quality improvements with regard to better timeliness therefore have to be accomplished without losses in terms of the other quality characteristics. In the long term, this can be achieved only by changes in the production processes.

20. For questions that may be answered more suitably by short-term economic data, the demand for better timeliness is more relevant. We can differentiate between two types of use of short-term statistical data:

- fields of application where the data are needed quickly and with a high degree of reliability, and

- fields of application where the emphasis is on the tendency or the trend.

21. That means there are questions which do not always require exact answers; tendencies or trends will often be sufficient here.

22. The first category includes users within the sphere of statistics who, for example, need the results for performing the quarterly national product computations, and users in the central banks who need the data for monetary policy decisions. Monetary policy is the only political field I can think of where political decisions are taken in the short-term, too. Considering the importance of monetary policy decisions, statisticians and those responsible for monetary policies agree that the reliability of data underlying decision-making must never be replaced by better timeliness. So, better timeliness is acceptable only if data reliability remains unchanged – unless the data required as a basis for decision-making are not really as important as it is claimed they are. Even in this political sphere, it is not quite clear how important the timeliness of statistical information really is. I think that opinions about the right political decisions – and consequently about the right monetary policy decisions – do not so much depend on statistical indicators than on the economic theory providing the basis for such decision-making. So, calling for an ever faster supply of short-term economic statistics in part is used as an alibi. The more important a specific task is, the more urgently one has to call for better timeliness in providing data supporting the decision-making process. Is there any concrete example of a situation where making a decision in time was not possible because an important economic indicator was not available early enough?

23. Generally, any other political decisions - be it in economic policy, in labour market policy or in any other political field - are mainly designed for the medium or long term, rather than being taken by the governments on the basis of the current economic situation. Such decisions are mainly based on structural data, which in the international sphere of course must be comparable if they are to provide a good basis for decision-making. I think

this also applies to decision-making in business - if we disregard transactions on financial markets, because part of the decisions made in that sphere especially in recent months have been irrational in my opinion.

24. Let me now come to the second category of using short-term statistical information, that is uses which do not very much depend on reliability. The entire political sphere, the government and the opposition - and to a considerable extent also the media - depend heavily on short-term information. But that information is not used to take political decisions. Such information serves only for publicly discussing the success or failure of the policy-makers by interpreting the current economic situation. One of the consequences is that, in a democratic system, political action is permanently under observation. For this kind of information, it is not essential to know the exact figure of industrial production, the precise level of unemployment or the exact price increase. In all these cases, the tendency, or the direction of the trend, is the really important information. The short-term data needed here must be able to show whether the developments in the economy and society are in line with the political goals. This is sufficient for the public discussion to go on.

25. Our experience shows that the exact statistical data are no longer of interest for this user group or for this kind of use - especially for the mass media - when they are published two or three months later by official statistical bodies. At that time, they are already history. Frequently, the discussion is based on up-to-date short-term forecasts published by private research institutes. So, the question arises whether official statistics, too, should serve that special purpose of statistical information more than it did in the past. This directly leads to the question of how the world of official statistics sees itself. What is the system of official statistics, what does it want to be?

IV. Timeliness at all cost?

26. It is interesting to see that it is mainly the world of official statistics that faces the issue of reliability and timeliness, although this subject is just as relevant for the private institutes. As a matter of fact, official statistical data are permanently compared with the timeliness of data produced by private institutes, whereas the results of private data producers are not compared with the reliability standard of official statistics. What are the reasons for that? It may be because users attach more importance to timeliness than to reliability - but it may also be because users demand precisely what they perceive to be missing. It is well-known how long it takes to publish the statistical data in question, but it is very difficult for the user to judge how reliable these data are. In competing with private suppliers of data, it will not be sufficient to increase the users' awareness of quality aspects. At least for specific types of use, official statistical data have to be made available earlier than this was the case in the past.

27. For the official statistical community, reliability traditionally has been of substantial importance. From their point of view, many products offered on the private-sector market are "quick and dirty". I think, this point of view is the main reason why official statistical offices have found it so hard to produce rapid results.

28. The question is whether this view is still appropriate in an ever faster-moving information society. Quality is just not the same as reliability. Quality includes other elements, and timeliness is a very important one. The reliability of statistical data must not be an end in itself. It has to be governed by the purpose the statistical data are to be used for.

29. There is no doubt that official statistical bodies have the statistical data required for producing provisional or rapid results in the very short term. Due to the scope of their statistics, official statisticians should actually be in a position to produce such rapid results much more easily and, in terms of accuracy, better than private institutes. In part, private institutes do not even use hard data, but apply qualitative information and expectations of the economic transactors for the production of their statistical results. The preconditions for producing rapid results are certainly better at official statistical bodies. So, why don't they provide such information?

30. Official statisticians sometimes refuse the idea of providing "rapid results" because the potential margins of error might be too wide, which may lead economic transactors to take inappropriate decisions. I think this argument overlooks that anyone acting on the market is responsible for what he does. Those acting on the financial markets are not economic laymen but professionals who must be aware of the uncertainties that rapid results may be subject to. They cannot reduce their own risk by imputing a degree of accuracy to rapid official results which those simply cannot have. Users who are familiar with official statistical data and who know of the limited accuracy of rapid results will not base their economic decisions on such data. Nevertheless, rapid results supply important information to economic transactors; this is why such data, too, should have the maximum reliability possible. Users will always wish to apply those rapid results which, in their experience, are most reliable. Official statistical bodies should enter this competition with confidence. However, it must be emphasised here again that rapid results should be produced only for those fields of application where the tendency or the trend is what counts.

31. Another argument which does however not seem very convincing to me is that the positive image of an official statistical system producing reliable data might be damaged by the publication of rapid results. It is the task of the statistical offices' information policy to avoid that potential loss of image. In my opinion, the official statistical system will run a much higher risk of losing its image if it does not enter the market of rapid information. The public might soon confer an image of being "highly accurate but

obsolete, that means useless" upon official statistics. Even if this applies only to part of the use of statistical data, one has to keep in mind that the media play a key role in this respect. The media form opinions, and the negative image of official statistics caused by not releasing rapid information may easily infect the entire system of official statistics.

32. However, statistical offices should be careful not to try to outdo each other, following a misunderstood concept of competition. Benchmarking is quite fashionable now, and it is certainly a good idea to draw comparisons between one's own statistical system and other systems or to be subject to such comparisons. But one should not disregard the specificities of the individual countries. Otherwise we would run the risk of comparing things that are not comparable. So, timeliness at all costs is not desirable at all.

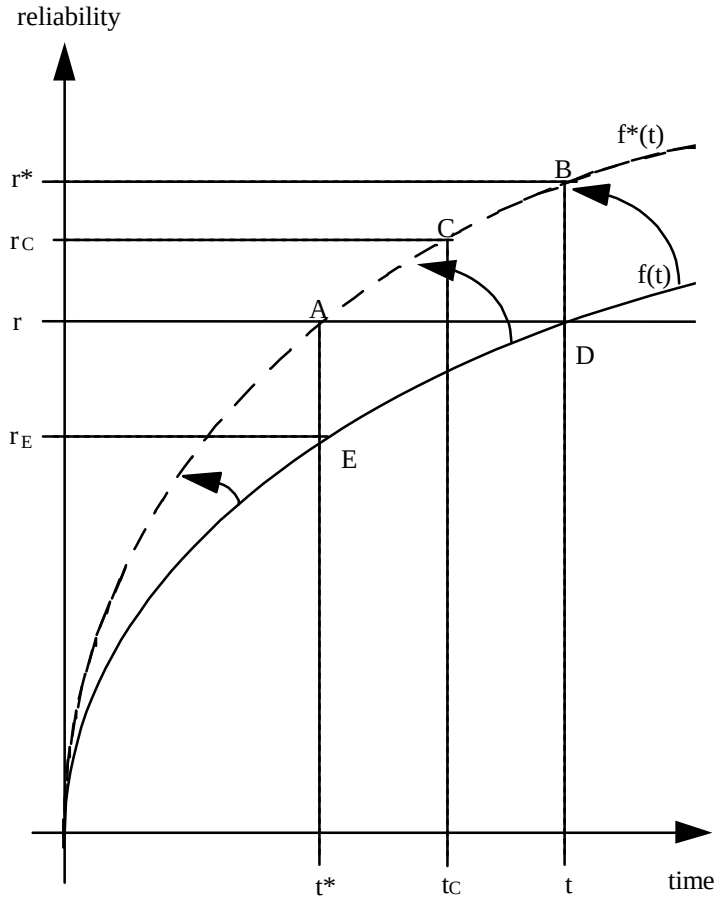
33. In the following section, I would like to examine the question of how timeliness can be improved in producing statistical data and how the trade-off between timeliness and reliability should be assessed.

V. Better timeliness by improved production processes?

34. If we consider the compilation of statistical data as a production process, the production may be modified so that either reliability or timeliness or both are increased. The two variables timeliness and reliability, however, are not independent of each other in this production process. Thus, the production function may be represented as a functional dependence between the two variables: $r = f(t)$ (figure 1). Suitable measures would permit to make official statistics more up-to-date without losing in reliability. Such measures are modifications of the production processes in the form of an extension of the productive factors, new technologies or other organisational structures in the processes.

35. In figure 1, this is represented by the dashed function $f^*(t)$ that is shifted to the left. When compared with situation D, in situation A the degree of reliability remains unchanged (r = constant), while timeliness has increased, that is, it has improved ($t^* < t$).

Figure 1



36. It is also possible that the new technology will increase reliability, with timeliness remaining unchanged (situation B: t = constant, r* > r), or that a new situation between the two can be achieved where both reliability and timeliness have been improved (situation C: rc > r; tc < t). The question arising here is whether it is realistic to assume that, by modifying the production processes, timeliness can sufficiently be increased to always meet users' requirements. I think this is possible only to a limited degree, and the deadlines for the compilation of statistical results play a major part in this context.

V.1 The production process

37. The production process is determined by the productive factors (labour and capital), the production technology and other framework conditions (for example, the legal framework, tradition). These parameters cannot be changed substantially. Also, they are not easily comparable at an international

level. This means that international comparisons between statistical systems - for example those published in the Economist - are highly problematic.

38. In many countries the budgetary situation of government agencies hardly permits any extension of the productive factors. Technological improvements are often neutralised by the expansion of statistical programmes. Short-term modification of the framework conditions is not possible either. This means that in most countries production processes cannot be changed very easily in practice.

39. We would however assume that such changes are possible at least in theory. The production of structural data - that is, processes taking quite a long time -, allows to reduce the production time by taking technical and organisational measures, that is by modifying the production processes.

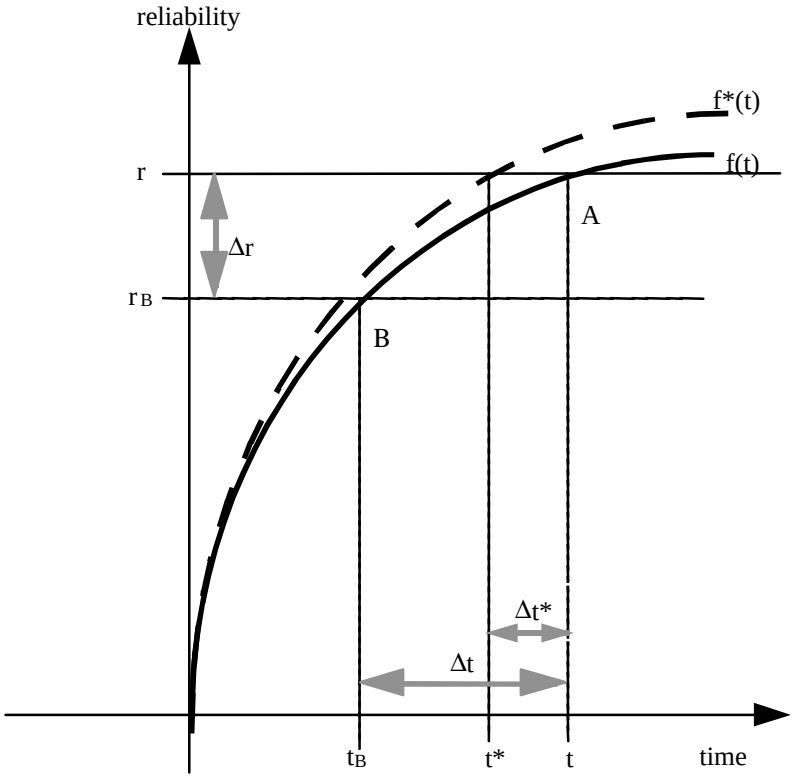
40. This is much more difficult for the production of short-term economic data. As such short-term economic data have to be produced with much closer deadlines, the time component is an integral part of the production process, and consequently has to be given much more weight here than is the case with the production of structural data. Generally, for the production of short-term economic data, not much scope is therefore left for the time factor.

41. In view of this situation, the considerations should not only focus on modifications of the production processes. They should rather include changes in timeliness and reliability with a given input of technology and productive factors. With the production function remaining constant, this corresponds to moving on the curve, for instance from D to E in figure 1 ($rE < r$, $t^* = tE < t$). Thus there is a substitution between timeliness and reliability, which illustrates the trade-off relation between the two variables.

V.2 The trade-off

42. Figure 2 shows a situation ($A \rightarrow B$) where a considerable gain in timeliness (Δt) can be obtained only by losses in reliability (Δr), while a modification of the production function ($f^*(t)$) will hardly improve timeliness (Δt^*). Considering the production process described in section 5.1, this situation seems typical to me for the production of short-term economic statistics. As we can see, achieving gains in timeliness through modifications in the production process is hardly possible in those areas where timeliness is especially important, that is for short-term economic indicators such as production, orders received, turnover, exports, employment, income, prices. If we want to improve timeliness for short-term economic statistics, we have to take into account the existing trade-off between timeliness and reliability.

Figure 2



43. This means that a gain in timeliness will hardly be possible without losses in reliability. Therefore, we should bear this aspect in mind when discussing about timeliness and reliability of statistical data.

44. Those users of short-term economic data for whom data reliability has top priority will not benefit from such a gain in timeliness. But, as has been shown in section 3.2, that kind of data use is quite rare. What is more frequent in short-term use of statistical data is that the emphasis is on the trend. In such cases, official statistics should consider the trade-off relation more seriously than it has been doing up to now and it should offer rapid results, accepting a loss in reliability.

VI. Conclusions

45. Having thus analysed the connection between timeliness of statistical information on the one hand and their reliability, including international comparability, on the other, I draw the following conclusions:

- The topic is relevant first of all for short-term economic statistics, rather than for structural information.
- International comparisons are mainly based on structural information, where the emphasis is on data comparability rather than on timeliness. For those purposes, timeliness must not be improved at the expense of reliability or comparability.
- There are hardly any important political or economic decisions to be made in the short-term which cannot be made because of a lack of reliable short-term economic data. The reason for existing uncertainties is mainly inadequate economic theories rather than an inadequate data base. Although calling for more timely data is fashionable nowadays, it sometimes diverts the public attention from other problems.
- In the process of producing statistical short-term economic indicators, there is hardly any scope left for achieving considerable gains in timeliness. Also, the conditions of production are not always comparable at an international level. Although benchmarking is important, it must not lead to easily abandoning the goal of reliability as a result of a misunderstood concept of competition.
- *Obtaining gains in timeliness at the expense of reliability is acceptable only if the relevant questions can sufficiently be answered by trend or tendency information. There are many questions of that type and this market must not be left to private-sector information providers but has to be served by official statistics more intensively than in the past. Thanks to its know-how and its existing data base, the system of official statistics is in a very advantageous position. Official statistics should make more use of those advantages to strengthen its own image.*