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Leading, composite and sentiment indicators

Guidelines on producing leading, composite and sentiment indicators

Note by the Task Force on leading, composite and sentiment indicators

Summary

This document contains an extract from Chapter 1 of the *Guidelines on producing leading, composite and sentiment indicators*. It was prepared by a Task Force composed of Denmark, Hungary, Israel, Italy, Mexico, Netherlands, Sweden, Turkey, Eurostat, OECD, UNSD and UNECE. Mr Jeroen Boelhouwer, The Netherlands Institute for Social Research, and Mr Gian Luigi Mazzi, GOPA Consulting Group, participated in the Task Force as independent experts. Until October 2017 the Task Force was chaired by Sweden. From November 2017 the group was chaired by Denmark.

The purpose of the Guidelines is to provide guidance to national statistical offices on their possible roles in developing and producing leading, composite and sentiment (LCS) indicators and give practical and operational guidance to statistical offices that already produce or consider producing LCS indicators.

The full text of the Guidelines has been sent to all members of the Conference of European Statisticians (CES) for electronic consultation. Subject to a positive outcome of the consultation, the CES plenary session will be invited to endorse the Guidelines.

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I. Introduction

1. Over the last decade there has been a growing interest in leading, composite and sentiment indicators to shed light on the social and economic development of societies. They are often referred to by the media and play a growing role in societal discussions and in policy decision making.

2. Leading, composite and sentiment (LCS) indicators offer a powerful way of communication of statistical information and reaching out to users of statistics. The indicators can provide relevant and timely information on aspects of the economy and the social society that are not covered by other statistics. They can also provide information on complex phenomena in simple and condensed form, for instance on the current or expected economic development or on the well-being or sense of happiness of the citizens.

3. While some statistical offices have experience in compiling and disseminating leading, composite and sentiment indicators, they are new to many offices. To assist statistical offices in producing leading, composite and sentiment indicators, the Bureau of the Conference of European Statisticians (CES) in 2016 established a Task Force to develop practical and operational guidelines to statistical offices that produce or consider producing leading, composite and sentiment indicators. These Guidelines are the results of the work of the Task Force.

4. The Guidelines acknowledge and refer to existing international methodological handbooks and manuals, such as provided by Eurostat, the Organisation for Economic Co-operation and Development (OECD) and the United Nations Statistics Division (UNSD).

II. Background

A. Leading, composite and sentiment indicators

5. LCS indicators cover a broad and diverse group of statistical measures, which in different ways aim to provide information about the society and its individuals. Leading indicators aim to anticipate the development of a reference series. Typically, leading indicators are constructed to predict the cycles of industrial production or gross domestic product (GDP), which are used as proxy measures for economic development. Leading indicators are constructed based on one or often several individual indicators, which taken together are found to have a leading property compared to a chosen reference series. Composite indicators are constructed to measure complex, or multidimensional, phenomena by combining individual indicators into one single measure by simple averaging or more advanced statistical methods. Sentiment indicators are compiled to reflect the perceptions, attitudes or expectations of groups of respondents, e.g. different groups of individuals, households or businesses. Sentiment indicators are usually based on qualitative surveys asking about the opinion on past, present or future developments based on which the indicator is constructed.

6. LCS indicators offer information on a range of topics that are not covered by what may be considered traditional official statistics, or which typically have not been covered by national statistical offices (NSOs). Moreover, LCS indicators may also provide information on complex issues in a relatively simple or condensed form, which appeals to many users of statistics. This includes policy makers and the media, who increasingly refer to LCS indicators.

7. Over the previous decade there has been a growing demand for LCS indicators, which are becoming still more common in different areas, including business cycles analysis, measuring of well-being and sentiment indicators expressing the confidence or the expectations of businesses in the economic development, or the expectations of households towards the future or their sense of happiness or safety. LCS indicators are also becoming more and more common for international comparisons to assess country performance and are increasingly used for policy making.

8. The demand for LCS indicators has been driven by evolving user needs for indicators that are easier to compare, provide information in condensed form and shed light on areas traditionally not covered, or not covered very well, by most NSOs. Some LCS indicators can be compiled relatively quickly and hence give earlier indications of developments than can be found in traditional statistical series. The development is facilitated by the growing abundance of data, processing power and IT tools, which makes the production of LCS indicators much easier than in the past. Hence, many LCS indicators are produced by other data providers than the NSOs.

B. The role of national statistical offices

9. LCS indicators are potentially an area where official statistics could engage for the benefit of all stakeholders. However, there are different practices among countries, as well as different views on the role of NSOs in the production of LCS indicators. Some NSOs consider LCS indicators out of scope of what they should produce, or do not see LCS indicators as a priority. Some NSOs also fear that engaging in the production of LCS indicators may harm the credibility of the NSOs as the provider of official statistics.

10. Other NSOs have considerable experience in producing LCS indicators or are considering the possibility to engage in the production of LCS indicators. NSOs can ensure that indicators are produced based on the principles of official statistics and, by disseminating the indicators improve users' perception of the relevance and value of official statistics. It can also be argued that if statistical offices do not use their data and expertise to produce these indicators, they may be produced by other organisations not adhering to the principles of official statistics. Such organisations may not invest the necessary resources to ensure the production of high-quality indicators, nor disseminate sufficient documentation of data sources and methods.

11. There is, however, no consensus on what the role of NSOs should be regarding LCS indicators. Should the production of LCS indicators be left to other organisations, or should NSOs take a greater role in the development and production of LCS indicators? Should NSOs be more active in providing data and offering their expertise to other organisations producing LCS indicators?

C. Scope of the Guidelines and how to use them

12. The scope of the Guidelines is leading, composite and sentiment indicators. These are not three distinctive and mutually exclusive groups of indicators. For instance, a composite indicator may also be a leading indicator, and a sentiment indicator may be constructed as a composite indicator. In these Guidelines, leading indicators are not presented as a separate group of indicators but considered a subset of composite and sentiment indicators. Hence, Chapter 4 on sentiment indicators also discusses leading sentiment indicators, and Chapters 5 and 6 on composite indicators also discuss leading composite indicators. For ease of reference, the group of leading, composite and sentiment indicators is referred to as LCS indicators throughout the Guidelines.

13. The Guidelines do not deal with individual quantitative indicators that may be interpreted or used as sentiment or leading indicators. For instance, inventory statistics, building permits statistics, car sales statistics or industrial production indices may be used as indicators of business expectations, or as early indicators of the business cycle. The role of NSOs in their production is well-established and a wealth of international statistical standards and recommendations on their production are available for NSOs to draw upon. For the same reason, the Guidelines also do not deal with traditional statistical measures, such as the gross domestic product (GDP) or the consumer price index (CPI).

14. The Guidelines introduce LCS indicators and their main characteristics, provide guidance to statistical offices on their possible roles in developing, compiling and communicating LCS indicators and give practical and operational guidance to statistical offices that produce or consider producing LCS indicators. The Guidelines highlight pros and cons of the different types of indicators and opportunities, risks that statistical offices should

consider when engaging in their production, and outlines the basic steps for the construction of the indicators. The Guidelines do not provide detailed methodological or technical guidance for the construction of LCS indicators. Instead, references are made to existing methodological handbooks and manuals such as provided by OECD, Eurostat and UNSD. The Guidelines can be used to inform the decision on whether to engage in the production of LCS indicators and how to organise their compilation and communication, while more detailed methodological guidance as mentioned must be found in existing international guidelines.

D. Initiatives by the Conference of European Statisticians

15. In response to the growing importance of LCS indicators, the Bureau of the CES in 2014 undertook an in-depth review of leading, composite and sentiment indicators to discuss the role of official statistics in this context. As a basis for the in-depth review, the UNECE Secretariat carried out a survey on country practices in producing LCS indicators and received replies from 38 CES countries. The survey confirmed different practices and different views on the involvement of NSOs in the production of LCS indicators. The Bureau concluded that exchange of experiences and best practices would help countries in producing LCS indicators. The Bureau also found that the area lacks international coordination and identified a need to achieve a common understanding of the role of statistical offices in this area as well as for guidance for NSOs that produce or consider producing LCS indicators.

16. The CES plenary session in April 2014 confirmed a large interest in LCS indicators but also different views on to what extent NSOs should engage in the production of LCS indicators. The Conference concluded that it would be useful to further discuss the role of official statistics and the challenges in compiling and disseminating LCS indicators and to clarify the responsibilities and boundaries of national statistical offices' roles in this regard. To follow up on the decision of the Conference, an international seminar on the role of NSOs in producing LCS was organised in December 2015 in Geneva. The seminar discussed the role of official statistics and national statistical offices in producing LCS indicators as well as methodological and practical issues related to the compilation and dissemination of LCS indicators.

17. On this background, in February 2016, the Bureau formed a Task Force to develop Guidelines for producing LCS indicators. The Guidelines should clarify the possible roles of NSOs in producing LCS indicators and provide practical and operational guidance for NSOs that produce or consider producing LCS indicators. The Task Force commenced work in March 2016 outlining the main content of the Guidelines and organising the drafting of the chapters with lead and contributing authors assigned to each chapter. At a second international seminar on LCS indicators in July 2017 in Geneva, the draft chapters were presented to solicit input from the participating countries and organisations.

18. An interim consultation of the first draft version of the Guidelines was carried out in March-April 2018 to give all CES members an opportunity to review the Guidelines and provide comments and proposals to the Task Force for improvements. 37 countries, 3 international organisations and 3 research institutions replied to the interim consultation with suggestions for further improvements. The draft Guidelines and the results of the interim consultation were presented to the CES plenary session in June 2018. The Conference expressed support for the Guidelines and underlined the growing interest in leading, composite and sentiment indicators as ways to provide relevant and timely information about economic and social developments to users of official statistics. The Conference asked the Task Force to incorporate the comments and proposals received in the interim consultation and circulate an updated version of the Guidelines to CES members for a final round of consultation with the view to be submitted to the 2019 CES plenary session for endorsement.

III. Purpose of the Guidelines

19. The main objectives of the Guidelines are the following:

A. To give guidance on the possible roles of NSOs in producing LCS indicators

20. The Guidelines present different roles of NSOs in producing LCS indicators and give strategic advice on how to meet user demands for LCS indicators while adhering to the principles of official statistics. The Guidelines highlight problems and issues associated with the production of the indicators and discuss the possible opportunities and risks for NSOs in compiling and communicating LCS indicators.

B. To give operational and practical guidance to NSOs on producing LCS indicators

21. The Guidelines give operational and practical guidance on how to compile and communicate LCS indicators. To this end, the Guidelines include a typology of LCS indicators and recommend steps and methods for the compilation of LCS indicators. They also identify challenges and pitfalls in the compilation and dissemination of LCS indicators, give guidance on quality assurance issues based on the principles of official statistics and address issues related to international comparability. The Guidelines do not provide detailed methodological guidance. Instead, references are made to available handbooks and manuals such as provided by Eurostat, OECD and UNSD[1] where methodological and technical guidance can be found.

C. To give examples of good practice to NSOs for producing LCS indicators.

22. The Guidelines include examples of good practices for the compilation and dissemination of LCS indicators, which describe data sources, compilation methods and different ways of dissemination.

IV. Overview of the Guidelines

23. The Guidelines are structured in seven chapters and annexes. Each chapter can be read separately, while the reader should be familiar with the main concepts used, which are described in chapter 2. The Guidelines include national and international good practice examples presented throughout the chapters and in the annexes.

24. Chapter 2 presents a typology of LCS indicators. The typology defines and explains the different types of indicators and provides examples of the main indicator types. The typology focuses on sentiment and composite indicators. For both, a distinction is made between indicators with a reference series and indicators without a reference series. Leading indicators are not dealt with as a separate group of indicators but considered a subset of composite and sentiment indicators.

25. Chapter 3 discusses the role of NSOs in producing LCS indicators to meet user needs while adhering to the principles of official statistics. The chapter discusses challenges faced by NSOs in producing LCS indicators, gives guidance on cooperation with users and stakeholders and issues related to quality assurance, and describes different strategies applied by NSOs in relation to producing LCS indicators. The chapter also presents an analysis of

[1] In particular the *Handbook on Constructing Composite Indicators* (OECD, 2008) and the *Handbook on Cyclical Composite Indicators* (EU & UNSD, 2017a).

possible strengths, weaknesses, opportunities and threats (SWOT) that NSOs producing LCS indicators must take into account.

26. Chapter 4 presents sentiment indicators. The chapter focuses on single sentiment indicators and makes the distinction between economic and socio-economic sentiment indicators. For both groups of indicators possible pros and cons are listed followed by presentations of compilation procedures and analysis, including comparisons with reference series. Issues related to international comparability are also briefly addressed.

27. Chapter 5 provides an overview of composite economic indicators. This chapter presents the most commonly used models for composite economic indicators and provides guidance on their compilation. It highlights advantages and disadvantages/risks of composite economic indicators and issues and pitfalls NSOs should be aware of when constructing these. A distinction is made between *cyclical indicators* and *structural indicators*. The chapter presents in a condensed form the steps involved in the production of a cyclical composite economic indicator, based on the *Handbook for Constructing Composite Indicators* (OECD, 2008) and the *Handbook on Cyclical Composite Indicators* (EU & UNSD, 2017a).

28. Chapter 6 focuses on composite socio-economic indicators. It provides some background and highlights differences with composite economic indicators discussed in Chapter 5. Furthermore, it presents the main steps for constructing a composite socio-economic indicator: setting-up the conceptual model of the indicator; selection of dimensions and indicators; data treatment; multivariate analysis, normalisation of data, weighting and aggregation; and validation. Aggregating over different dimensions, lack of reference series and lack of a common unit of measurement (as given in monetary units for economic indicators) bring in additional challenges in the construction of socio-economic indicators that are discussed.

29. Chapter 7 discusses the communication and dissemination of LCS indicators, which is considered a strategic factor for success. The chapter lists the specific challenges involved in the dissemination of LCS indicators and gives guidance on the targeting of user groups and how to communicate the indicators in the right context and in line with principles of official statistics

30. The Guidelines include annexes. Annex A provides guidance on how to compare economic sentiment indicators with their reference series, which serves as a supplement to chapters 4 and 5. Annexes B-H include detailed country examples of the production of leading, composite and sentiment indicators by Italy, Mexico, Netherlands, Sweden and Turkey.

V. Topics for further work and research

31. The Guidelines focus on providing practical guidance to countries that produce or consider producing LCS indicators. During the drafting of the Guidelines the Task Force noted a number of topics where further work and research would be useful. These topics are listed and briefly described below.

A. Sharing of experiences and good practices among countries

32. LCS indicators are still new to many statistical offices and countries are at different level of development with regards to the production of LCS indicators. It is, therefore, important to continue sharing experience and good practices among countries and organisations concerning both conceptual, methodological and measurement issues and challenges related to the communication of LCS indicators. To this end, it would be useful to organise international seminars or workshops to exchange experiences and good practices on LCS indicators and their compilation, ideally focusing on specific topics (e.g. economic or socio-economic indicators). Special workshops and seminars targeted to countries with less developed statistical systems may also be useful. As part of the exchange of experiences,

the possibility of establishing a website with a repository of relevant material for countries to consult should be considered.

B. Mapping of country practices

33. Methods and practices in compiling LCS vary much across countries. It would be useful with a mapping exercise to have an overview of which NSOs, or other organisations, produce what types of LCS indicators, and which methods and practices are used. Such an overview would be helpful to identify good practices as well as areas where there are different practices and where, eventually, more guidance would be useful.

C. Developing a statistical framework for measuring well-being

34. Several existing frameworks for measuring well-being exist, the OECD Better Life Index, for instance. However, these are linked to various policy agendas or to specific goals. It would be useful to develop a purely statistical framework for a composite indicator on well-being that NSOs could lean on and refer to if they would like to engage in the production of a well-being composite indicator. The framework should include a proposal for a conceptual model delineating well-being and suggesting the dimensions of the indicator and possible individual indicators for each dimension. For each indicator, guidance could be provided on definitions, data sources and calculation methods. The framework should also give guidance on the weighting and aggregation of the dimensions and the individual indicators.

D. Social capital and well-being

35. Social capital and how to measure it has attracted much interest in recent years, as reflected, for instance, in the OECD Measurement of Social Capital Project and Question Databank. The concept of social capital is partly overlapping with that of well-being. It would be useful to clarify the relations between these two concepts and investigate, for example, what indicators may be used for the compilation of both social capital and well-being.

E. Exploitation of data sources

36. NSOs may be reluctant to engage in the production of LCS indicators because of lack of resources to develop the indicators and ensure continuous production. It would, therefore, be useful to investigate the possibilities of exploiting potential data sources including existing registers, surveys, big data and other data available from internet and how information from different sources may be utilized to produced LCS indicators. As part of this it would also be useful to discuss how to simplify survey questionnaires and reduce expensive interview surveys.

F. International comparability and SDGs

37. Some LCS indicators will only fully serve their purpose once they are internationally comparable (especially in the context of well-being and development). Hence, a special focus could lie on the issue of standardizing and mainstreaming leading, composite and sentiment indicators into official statistics and of making them comparable. This is a basic requirement for LCS indicators that are used for measuring SDGs (for example sentiment indicators: 2.1.2 based on the Food Insecurity Experience Scale; indicator 5.6.1 on women's participation in decisions on sexual relations, contraceptive use and reproductive health care, indicator 10.3.1 on personal perception of harassment and discrimination, and indicator 16.1.4 on perceived

security, with an example in Box 7.3)[2]. Additionally, there are tier three SDG indicators that might be designed as LCS indicators, which has to be evaluated case by case.

G. Other topics

38. A number of more specific topics would benefit from international work and could, for instance, be discussed at possible future meetings or workshops. These include a broad range of methodological and practical issues, including e.g. the development of sentiment indicators for the services producing sector; indicator performance over time; investigation of ranking techniques for ordinal (qualitative) variables; practical and operational guidance to assist countries in producing LCS indicators and; issues concerning the communication and use of LCS indicators.

[2] The full list of indicators and their descriptions can be found on https://unstats.un.org/sdgs/metadata/