Introduction to the handbook on cyclical composite indicators

International workshop on short-term statistics

18-20 May 2015
Beijing, People's Republic of China

United Nations Statistics Division

Outline of presentation

- Introduction to cyclical composite indicators
- Objectives
- Governance structure
- Outline
- Status and way forward

What are cyclical composite indicators?

- Are a large family of indicators measuring different aspects of economic activity
- Are formed by combining other statistical indicators

Features

- Have different timings
- Serve various purposes
- Are based on a variety of statistical/econometric methods
- Rely on various data sets
  - Quantitative statistical variables
  - Qualitative variables
  - Financial indicators

- Provides statistical guidance on harmonized principles for application in the formulation of cyclical composite indicators and standards for their compilation and presentation

- Assists compilers in producing cyclical composite indicators in a comparable way, to enable reliable international comparisons of economic performance and behaviour using the best international practices

- Assists countries that plan to set up a comprehensive system of cyclical measures by

  - Providing the methodological foundations for business or growth cycle compilation

  - Offering practical guidance on individual steps and elements of the compilation process

- Serves the needs of producers of short-term statistics and analytical users by making them aware of the statistical methods and techniques employed in the construction of composite indicators

- Working group was established to prepare handbook:
  - Statistics Netherlands (lead)
  - Eurostat
  - The Conference Board
  - United Nations Statistics Division
- Experts from these organizations drafted the various chapters in the handbook
- Conference calls were organized and email communications were used to discuss and clarify issues and progress

8 sections comprising 22 chapters

Section 1: Introduction and definitions

- Chapter 1: Introduction and overview of the handbook
  - Discusses the objectives and structure of the handbook
  - Provides short overview of the usefulness of cyclical composite indicators

- Chapter 2: A brief history of business cycle measurement and analysis
  - Discusses various exogenous and endogenous theories of cyclical fluctuations

- Chapter 3: Definitions and taxonomy of indicators
  - Discusses various ways to classify the indicators
  - Surveys alternative methodological approaches to construct cyclical composite indicators
  - Applies the various approaches to selected countries

Outline

Section 2: Data requirements

- Chapter 4: Data availability, frequency and adjustment techniques
  - Discusses how statistical agencies handle various data issues:
    - Missing data
    - Data unavailability at a desired frequency
    - Proxies
    - Seasonal and calendar adjustment
    - Deflation
    - Backcasting

Section 3: Variables and models selection techniques

- Chapter 5: Review of parametric and non-parametric variable and model selection techniques
  - Describes various approaches to select variables and models
  - Presents and compares the advantages and drawbacks of the alternative techniques
  - Applies the various approaches to actual data sets

- Chapter 6: Unbalanced large versus small data sets
  - Describes how to work with large and small unbalanced data sets to construct cyclical composite indicators and to forecast real GDP growth

Section 4: Indicators measuring cyclical movements

- Chapter 7: An overview

  - Provides an outline of the section with a description of the structure of the chapters

- Chapter 8: The Conference Board approach

  - Describes The Conference Board's approach to constructing cyclical composite indicators in terms of

    - Choice of reference cycle

    - Selection of variables

    - Approach to aggregation

  - Compares the similarities and differences between The Conference Board's approach and the original NBER's approach

Section 4: Indicators measuring cyclical movements

- Chapter 9: De-trending methods: parametric views versus non-parametric and univariate versus multivariate

  - Reviews the literature on the methods to perform de-trending and cycle extraction

  - Classifies the various methods and discusses their advantages and drawbacks

  - Provides an illustrative application to de-trending Euro-area GDP in real-time

Section 4: Indicators measuring cyclical movements

- Chapter 10: The OECD approach

  - Describes the purpose of the OECD system of composite leading indicators, including a discussion of its definition, scope and intended audience

  - Discusses the improvements and changes that have been made since its introduction

  - Provides a step-by-step guide to the techniques used in the construction of the composite leading indicators

  - Provides a summary on how to present the composite leading indicators

Section 4: Indicators measuring cyclical movements

- Chapter 11: The Stock and Watson approach
  - Introduces the model-based (probabilistic) Stock and Watson approach to constructing cyclical composite indicators
  - Provides the historical elements and main motivations to the development of the work
  - Describes how to select variables and specify models
  - Describes advantages and disadvantages of the approach

Section 5: Indicators for turning points detection

- ## Chapter 12: An overview

  - Provides an outline of the section with a description of the structure of the chapters

- ## Chapter 13: Alternative models for cyclical turning point indicators

  - Presents an overview of the alternative time series based and regression-based non-linear techniques and binary regression techniques to construct turning points composite indicators

  - Describes advantages and drawbacks of each approach with a focus on the trade-offs between timeliness and reliability and the risk of false signals

Section 5: Indicators for turning points detection

- **Chapter 14: Composite cyclical indicators detecting turning points within the ABCD framework**
  - Discusses the advantages of monitoring together several kinds of cycles by using the ABCD approach or the extended $\alpha AB\beta CD$ approach
  - Describes methodology for dating chronology with examples for the Euro area
  - Describes indicators in detail, including methodology, component variables and models used to develop them

- **Chapter 15: Probit Logit**
  - Discusses in detail the use of regression techniques to construct turning points indicators
  - Focuses mainly on the logit and probit approaches, their features, and advantages and drawbacks

Section 6: Indicators measuring economic growth

- Chapter 16: An overview
  - Provides an outline of the section with a description of the structure of the chapters

- Chapter 17: Factor vector autoregressive (VAR) based models: automatic leading indicators
  - Evaluates and compares the forecasting ability of variable reduction and variable selection methods using small and large datasets
  - Discusses the results of applying the methods to predicting the growth rate of industrial production in the Euro area

Section 6: Indicators measuring economic growth

- **Chapter 18: Large-scale factor models**
  - Reviews the literature on large-dimensional dynamic factor models for constructing business cycle indicators and for predicting economic activity
  - Reviews the techniques to overcome issues inherent in economic statistics such as delays in releases, revisions, differences in frequency, non-synchronous releases

- **Chapter 19: Regression, principal components and small scale factors based models**
  - Discusses how to apply regression models using principal components to give early estimate of quarterly GDP growth in the coincident quarter
  - Discusses data issues

Section 7: Validation

- **Chapter 20: An overview**
  - Provides an outline of the section

- **Chapter 21: Validation of indicators**
  - Discusses issues related to the construction of a real-time database and usefulness of a real-time database in validating cyclical composite indicators
  - Describes how to build up a real-time exercise to validate cyclical composite indicators and examine vintage databases
  - Discusses how the use of leading-coincident-lagging structure to validate indicators

Section 8: Guidelines for the construction of cyclical composite indicators

- Chapter 22: Guidelines for the construction of cyclical composite indicators

  - Discusses best practices in constructing cyclical composite indicators

  - Presents a step-by-step operational guide to constructing cyclical composite indicators

- First draft of most substantive chapters has been completed

- Expert group is reviewing the draft chapters

- Draft handbook is scheduled to be circulated for global consultation by summer 2015

Thank you