

## BUSINESS TENDENCY SURVEYS

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### Topics

- Methodological Issues
- Practices in OECD Countries
- Inter-Country Comparability - Standard Questions - Harmonisation of Surveys
- Analytical Use of Results
- Presentation of Results

## Methodological Issues

- General features
- Questionnaire design
- Choice and form of questions
- Sample selection
- Data collection
- Calculation of results
- Presentation of time series

## General Features

- Qualitative information
- Assessments and expectations
- Easy and rapid to collect and process
- Cost -effective
- Timely information
- Wide range of variables
- Data rarely revised
- Nature of data suitable for business cycle monitoring and forecasting

## Choice of Questions

### 1 Variables for monitoring the business cycle:

- Measure an early stage of production (e.g. new orders, order books)
- Respond rapidly to changes in activity (e.g. stocks)
- Measure expectations or are sensitive to expectations (e.g. production, general activity)

### 2 Variables relevant for participating enterprises

- business conditions in own sector and in suppliers' and users' sectors

## Core Questions in OECD Countries

- |                            |                          |
|----------------------------|--------------------------|
| 1 Production               | 7 Employment             |
| 2 Order books              | 8 Production bottlenecks |
| 3 Secured production       | 9 New orders             |
| 4 Stocks of finished goods | 10 Capacity utilisation  |
| 5 Stocks of raw materials  | 11 General indicator     |
| 6 Selling prices           |                          |

## Questionnaire Design

### General layout

- Must be simple
- “tick box” questions
- not too many questions
- only one or two pages
- good appearance

## Form of Questions

- Assessment of current situation  
asked as an: appreciation of present *level*
- Appreciation of past/future changes asked in two forms:
  - 1 as a *comparison* between two periods
  - 2 as an indication of the *tendency* with no specified reference period

## Form of Questions and Preprinted Answers

- Assessment of current situation often imply a comparison with a **normal** situation with the following preprinted answers:

above normal    normal    below normal  
too high        about right        too low

- Appreciation of past/future changes use the following answers:

up                    same                    down  
higher            about the same        lower  
increase        unchanged            decrease

## Sample Selection

- The frame  
*Type of units* (enterprise, kind of activity, etc.)  
*Population* (target universe)  
*Classification* (to define target universe)
- Units and coverage  
Establishments in *one locality* or with *same KAU*
- Target universe  
*Enterprise characteristics* (units, size, location, etc.) and *reference time period*

## Sample Design

### Sampling methods

1 Selection of all units

Costly, time consuming

2 Purposive selection

Assumptions about data

3 Random sampling

Stratified sampling

## Sample Design for BTS Surveys

Modified stratified sampling better than  
pure probability sampling for both *practical*  
and *methodological* reasons:

- practical reasons

1 Voluntary participation

2 Valuable information for enterprises

3 Requirements on enterprises

book-keeping

short-term planning

## Sample Design for BTS Surveys

### **Modified stratified sampling**

- *Methodological reasons*

- 1 Size of sample depends on variance of the data
- 2 Changes in results between surveys based on a stable sample (*panel*) have as a rule smaller variance than results based on independent surveys

*Purposive selection within strata may be used*

## Data Collection

- Mailed questionnaires
- Electronic questionnaires in progress (service sectors)
- Personally addressed
- Returns completed at *senior management* level or by a *chief executive*
- Reporting voluntary
- Telephone, fax or e-mail reminder

## Calculation of Results

### **Aggregation method**

*Basic principle*

$X = (P, E, N)$  where

X = variable/question

P = fraction reporting increase

E = fraction reporting no change

N = fraction reporting decrease

and  $P + E + N = 100$

## Calculation of results

### **Presentation of time series**

Calculation of *one figure* for each variable question i.e

**Balance (B)**  $B = P - N$

and

$$P = 50 + (B-E)/2$$

$$N = 50 - (B+E)/2$$

## Calculation of Results

### **Weighting**

- Individual weighting of replies

*Functions:*

- 1 Correction for bias in the structure of the sample
- 2 First step towards quantification

- Aggregation weighting

— to reflect the relative significance of each stratum in the frame or the population

## Standard weighting methods

- Single weighting pattern

One weight is assigned to each respondent to reflect the relative importance of their answers in the *sample*

- Double weighting pattern

- 1 Weights to reflect the size of *individual* units in each *stratum*
- 2 Weights to reflect the relative importance of each stratum in the *frame*

## Calculation of results

*Basic formula for estimating the Balance (B)*

$$B_k = \frac{\sum_{i=1}^{nk} 1/f_i \times w_{ik} \times x_{ik}}{\sum_{i=1}^{nk} 1/f_i \times w_{ik}}$$

where

$B_k$  = balance

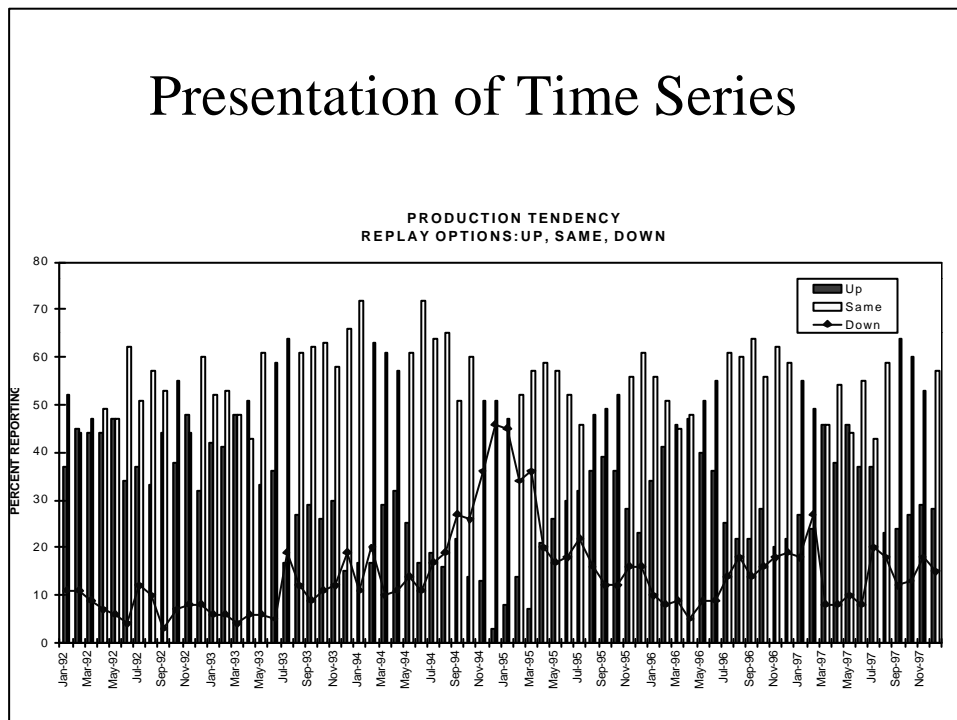
$n_k$  = report units in industry k

$f_i$  = sampling fraction for unit i

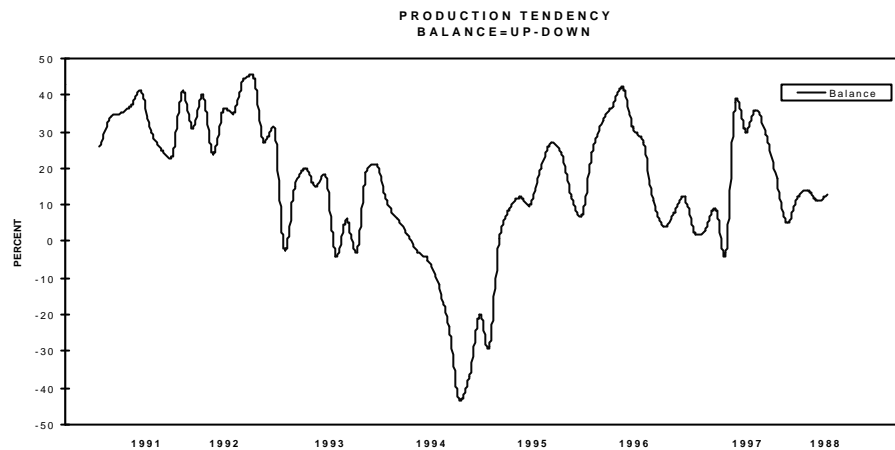
$w_{ik}$  = size of unit i in industry k

$x_{ik}$  = data of unit i in industry k

## Presentation of Time Series



## Presentation of Time Series



## Practices in OECD Countries

- Information requested
- Format of questions
- Sampling frames
- Sampling methods
- Sampling and survey characteristics
- Survey processing

## Top 10 Surveyed Variables in OECD Countries

- **Variables surveyed by all countries**  
(1) Production, (2) Order books, (3) Finished goods stocks and (4) Capacity utilisation
- **Variables surveyed by most countries**  
(5) Order inflow (new orders), (6) Raw material stocks, (7) Employment, (8) Selling prices, (9) Production bottlenecks, (10) General business situation

## Other Commonly Surveyed variables

- Sales, Deliveries, Turnover
- Stocks of work in progress
- Purchase of inputs, Lead time of purchases
- Raw material prices
- Exports/Factors limiting exports
- Investments
- Overtime, New employment
- Profitability, Costs, Productivity

## Format of Questions in OECD Countries

- ***Standard format*** normally used for stock (*level*) variables:  
(1) Finished goods stocks, (2) raw material stocks, (3) order books
- ***Non standard format*** normally used for flow (*change*) variables:  
(4) production, (5) orders, (6) employment, (7) prices and capacity utilisation

## Sampling Frames in OECD Countries

	<u>Share of countries</u>
• <i>Statistical Registers</i>	50%
• <i>Administrative Registers</i>	50%
1 Business Registers	50%
2 Trade Directories	50%

## Sampling Methods in OECD Countries

### Share of countries

1 Stratified Random Sampling	62%
2 Restricted Sampling	19%
3 Purposive Sampling	19%

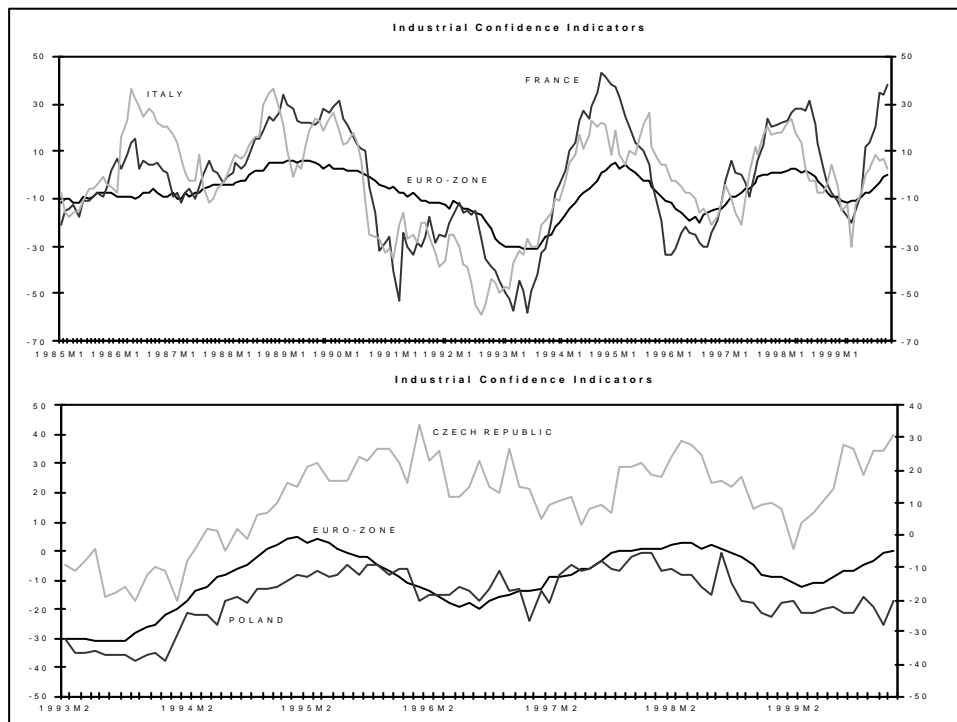
### Survey Characteristics in OECD Countries

Survey Frequency	<i>Monthly/Quarterly</i>
Sampling Unit	<i>Enterprise</i>
Sample Size	<i>1000-2000 Units</i>
Survey Coverage	<i>Correlated with Output</i>
Classification of Units	<i>Type of Activity</i>
Response Rate	<i>85%</i>
Stratification Variables	<i>Industry, Employment</i>
Aggregation Method	<i>Double Weighting</i>
Weighting Variables	<i>Employment, value added</i>

## Inter-Country Comparability - Standard Questions

A core set of standard questions:

- would improve *inter-country comparability* and
- would make aggregation to *regional totals* possible that
- would make comparison between *countries and regions* possible



## Harmonised Core Questions EC Survey in Industry

### Monthly Questions

- 1 Production
- 2 Order books
- 3 Export order books
- 4 Stocks of finished goods
- 5 Production expectations
- 6 Selling price expectations

### Quarterly questions

- 1 Employment expectations
- 2 Limits to production
- 3 Production capacity
- 4 Assured production
- 5 New orders
- 6 Exports expectations
- 7 Capacity utilisation
- 8 Stocks of raw materials

## Harmonisation of BTS Aspects concerned

- Content (questions/variables)
- Definitions and Specifications
- Format of Questions
- Period Covered by Variables
- Frequency and Timing of Survey
- Classifications

## Harmonised BTS in European Union

*Start of surveys:*

- Industry 1962
- Investment 1963
- Construction 1966
- Retail trade 1984
- Consumers 1972
- Services 1996

## Harmonised BTS in EU Countries

*National Statistical Offices or Research  
Institutes* conduct the different surveys in  
the 15 EU countries:

Austria	Germany	Netherlands
Belgium	Greece	Portugal
Denmark	Ireland	Spain
Finland	Italy	Sweden
France	Luxembourg	United Kingdom

## Developments of BTS in Central and Eastern Europe

	NHS		NHS
• Albania	X	• Latvia	
• Bosnia-Herzegovina	X	• Lithuania	
• Bulgaria		• FYR of Macedonia	X
• Croatia	X	• Poland	
• Cyprus	X	• Romania	
• Czech Republic		• Slovak Republic	
• Estonia		• Slovenia	
• Hungary		• Yugoslavia	X

## Development of BTS in CEE - Workshops\*

• Munich	1991
• Bratislava and Warsaw	1992
• Poznan	1993
• Prague and Tallinn	1994
• Sofia	1995
• Budapest and Ljubljana	1996
• Vilnius	1998
• Lisbon	2000

\* Joint OECD-EC-Eurostat activities

## Harmonised BTS Core Questions: Industry Survey

### **EU and Transition Countries**

- *Production and limits to production*
- *Order books and stocks of finished goods*
- *Selling prices and employment*
- Capacity utilisation

### **Transition Countries**

- *Business situation*
- *Investment: plans, type and constrains*

## Definitions and Specifications for Transition Countries

### **Question on limits to production: options**

- |                                 |   |
|---------------------------------|---|
| • None                          | • Shortage of input products              |
| • Domestic demand               | • Shortage of raw materials               |
| • Foreign demand                | • Shortage of energy                      |
| • Competitive imports           | • Financial problems                      |
| • Shortage of skilled labour    | • Unclear economic laws                   |
| • Lack of appropriate equipment | • Uncertainty of the economic environment |

## Definitions and Specifications for Transition Countries

### **Question on factors limiting investment decisions: options**

- Insufficient demand
- Cost of capital too high
- Credit guarantees insufficient
- Insufficient profits
- Fear of indebtedness
- Technical factors

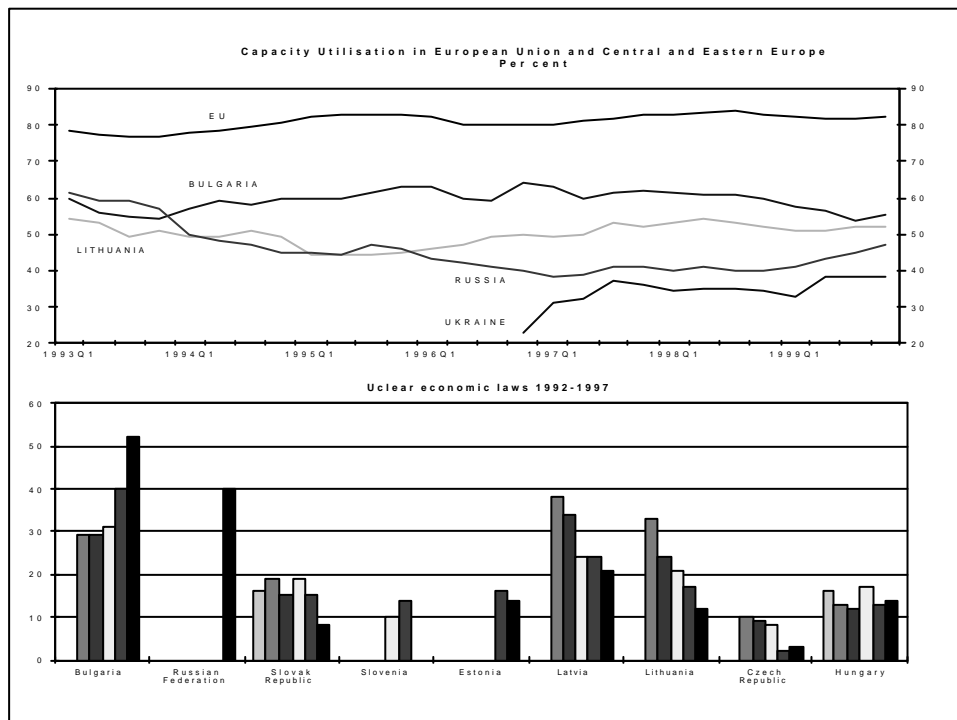
## Harmonised BTS in CEE Transition Countries

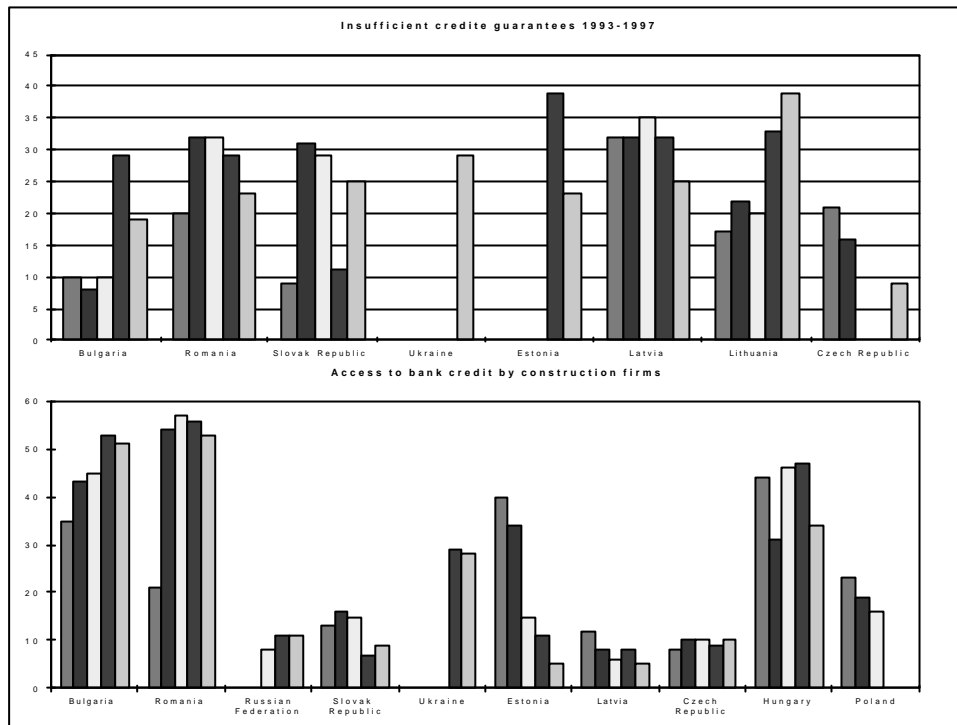
### *Start of surveys*

- Industry 1991-1995
- Construction 1992-1996
- Retail trade 1992-1996
- Consumers 1993-1996

## Progress with Harmonisation in CEE Transition Countries

- Content covers:
  - 1 EU core questions
  - 2 Transition specific questions
- Frequency: Monthly/Quarterly
- Period covered by variables: *harmonised* with EU
- Classifications: *Partly* harmonised with EU
- Timing of surveys: *Partly* harmonised with EU





## Development of BTS in Russia and NIS

PHS

PHS

- |                   |   |                      |   |
|-------------------|---|----------------------|---|
| • Armenia         |   | • Moldova            |   |
| • Azerbaijan      |   | • Russian Federation | X |
| • Belarus         | X | • Tajikistan         |   |
| • Georgia         |   | • Turkmenistan       |   |
| • Kazakhstan      |   | • Ukraine            | X |
| • Kyrgyz republic |   | • Uzbekistan         |   |

## Developments of BTS in Russia and NIS - Workshops

- Tashkent\* 1993
  - Kiev\* 1996
- \*joint OECD- EC - Eurostat activities
- Workshops in Russia\*\*
- Moscow 1997, 1998
  - Voronovo 1999
  - Sochi 1999
- \*\* OECD activities

## Harmonisation of BTS in NIS Countries

### Start of surveys\*

- Industry 1992-1995
- Construction 1995-1997
- Retail trade 1997

\* experimental, regular or planned surveys

## Progress with Harmonisation in NIS countries

- Content covers:
  - 1 EU harmonised questions
  - 2 Transition specific questions
- Frequency: quarterly/monthly
- Period covered by variable:  
*partly harmonised* with EU
- Classifications: *not harmonised* with EU
- Timing of surveys: *not harmonised* with EU

## Developments of BTS in Asia/Pacific - Workshops

- Manila\* 1999
- Bangkok\*\* 2000
  
- \* joint OECD - Asian Development Bank  
(ADB activity)
- \*\* joint OECD - ADB - United Nations  
Economic and Social Commission for Asia  
and the Pacific (ESCAP) activity

## Analytical Use of Results

- *Interpretation* of survey results
- *Relationships* between survey data and quantitative statistics
- Business surveys and *cyclical analysis*
- *Integration* of business surveys in macro economic forecasting

## Interpretation of Survey Results

Technical issues fundamental for a correct interpretation of survey data:

- Formulation and and wording of questions
- Reference period for questions
- “Bias” in replay behaviour

## Interpretation of Survey Results

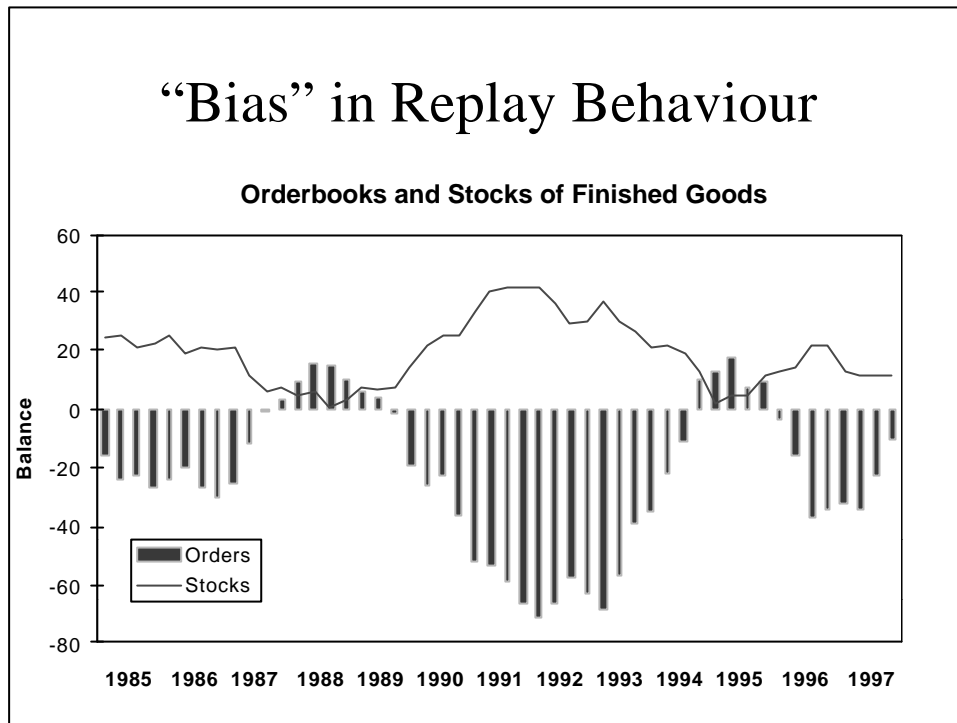
- The use of the *concept* “normal” in questions on stocks and order books may change over time and distort longer term comparisons
- Questions asking for *changes* may be difficult to interpret due to the fact that respondents may refer to other *reference periods* than asked in the question
  - past changes- *seasonal problems*
  - future changes- *time horizon*

## “Bias” in replay Behaviour

- Over optimism - stocks
- Over pessimism - order books

### Methods and tools to improve interpretation

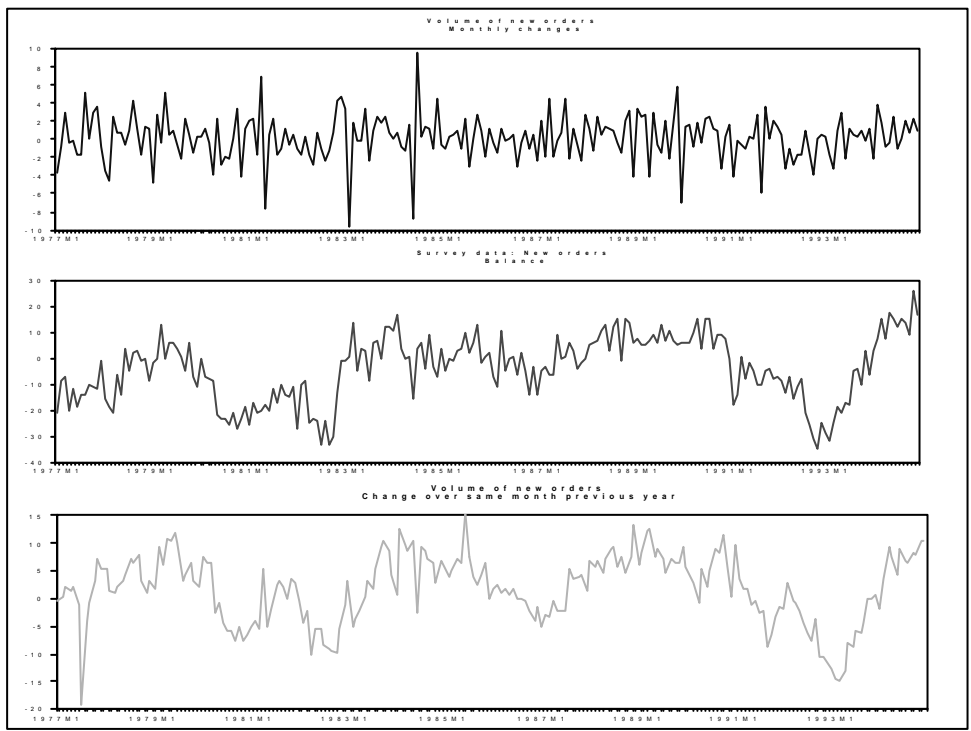
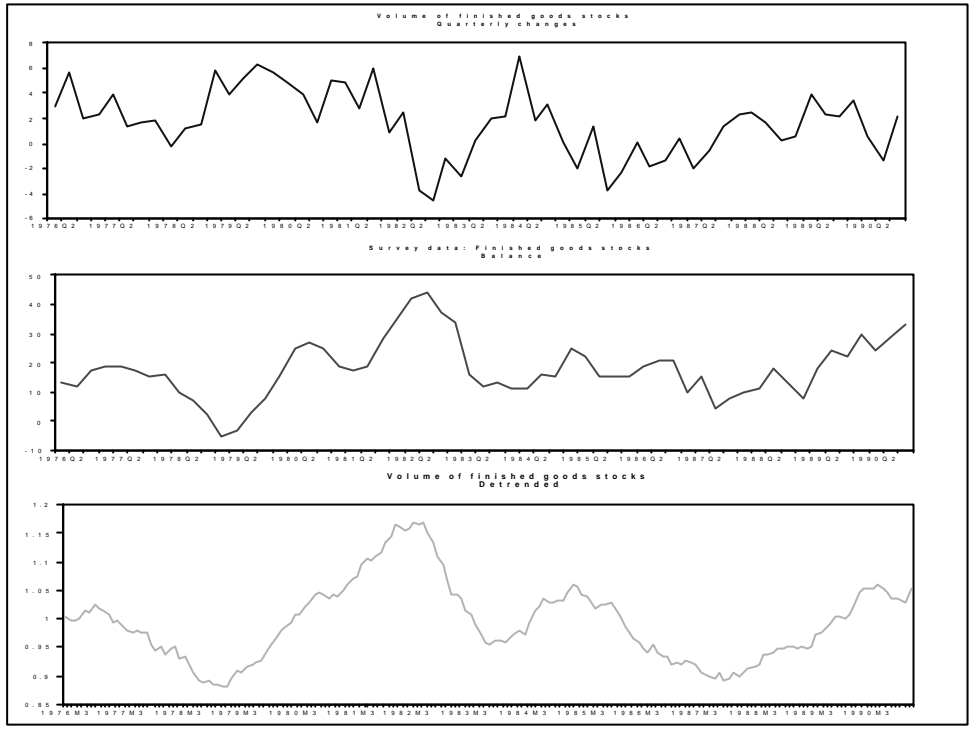
- *Evaluation* against corresponding quantitative statistics
- *Special survey* on answering behaviour
  - “Test of the test”



## Relationships Between Survey Data and Quantitative Statistics

- Survey series in *level form* refer to *trend deviation series*
- Survey series in *change form* refer to *first difference series*
  - 1 change over *previous period*
  - 2 change over *same period previous year*

OECD/ESCAP Workshop on Composite Leading Indicators and Business Tendency Surveys  
 (Bangkok, 24 - 26 February 2003)



## How Firms Answer BTS CBI Experience in Industry, 1989

### Interpreting survey data

- Normality
- Future change - trend
- Past present change
- Seasonal variation

## “Test of the Test” CBI Results

Benchmark used to assess the “normality” of  
total order books (volume)

	% of replies
• Past orders/historical average	70
• Budgetted plans/forecasts	64
• Capacity of plant/company	32
• Other	3

## “Test of the Test” CBI Results

*Time period* used in evaluating *future changes* -  
3-4 months ahead

	% of replies
• Comparison with <i>previous period</i>	53
• <i>Beginning to end</i> of period	21
• <i>Combination</i> of options	16
• Comparison with <i>same period</i> <i>of previous year</i>	9

## “Test of the Test” CBI Results

Adjustment for *seasonality* in *change*  
*questions*

	% of replies
• <i>Adjustment performed</i>	57
<i>subjective</i> basis	42
<i>statistical</i> method	15

## Business Surveys and Cyclical Analysis

*Theoretical and practical advantages of  
BTS data for cyclical analysis*

- Relevance
- Cyclical Behaviour
- Practical and Statistical Considerations

## Business Survey Series Relevance

*Economic rational*

*Type of variables:*

- Early stage indicators
- Rapidly responsive indicators
- Expectations
- Special indicators (capacity utilisation, business climate)

*Measure of real development*

## Business Survey Series Cyclical Behaviour

- 1 Cyclical Sensitivity - no trend
- 2 Leading Characteristics
  - Expectations
  - First difference series
  - Ratio to trend series
- 3 Consistency of Lead at turning points
- 4 Seasonality and Smoothness adjusted by respondents

## Business Survey Series Practical and Statistical Considerations

- 1 *No Major Revisions to Raw Data*
- 2 *Prompt Availability*
- 3 *Statistical Basis*
  - Qualitative information
  - Smaller sample
  - Reliable information

## Survey Indicators and Composite Indicators

*Internal composite indicators - data related  
to own firm*

- 1 *A single syntetic survey question - general  
business situation*
- 2 *Composite indicator based on a set of survey  
questions*

*External composite indicators*

- 1 *A single syntetic survey question - general  
economic situation in country/sector or industry*

## Confidence Indicators

Confidence indicators are *composite indicators*  
based on a set of survey questions

*Harmonised confidence indicators in the  
European Union*

- Industrial confidence indicator
- Construction confidence indicator
- Retail trade confidence indicator
- Consumer confidence indicator
- Economic sentiment indicator

## EC Industrial Confidence Indicator

*Simple average* of the *balances* of the three questions relating to

- 1 Production, future tendency
- 2 Total order books
- 3 Stocks of finished goods *with inverted sign*

## EC Construction Confidence Indicator

*Simple average* of the *balances* of the two questions relating to

- 1 Total order books
- 2 Employment, future tendency

## EC Retail Trade Confidence Indicator

*Simple average* of the *balances* of the three questions relating to

- 1 Business situation, tendency
- 2 Business situation, future tendency
- 3 Stocks *with inverted sign*

## EC Consumer Confidence Indicator

*Simple average* of the *balances* of the five questions relating to

- 1 Current financial situation of household
- 2 Expected financial situation of household
- 3 General economic situation, past tendency
- 4 General economic situation, future tendency
- 5 Current conditions for major purchases

## EC Economic Sentiment Indicator

*Composite indicator* based on the following  
*components*

- 1 Industrial confidence indicator
- 2 Construction confidence indicator
- 3 Consumer confidence indicator
- 4 Share price index

The sentiment indicator is a *weighted*  
average of the *standardised* changes

## Construction of Confidence Indicators

*Choice of reference variable*

<i>Indicator</i>	<i>Reference variable</i>
Industrial confidence ind	Industrial prod index
Construction confidence ind	Construction output
Retail trade confidence ind	Retail sales volume
Consumer confidence ind	Private consumption
Share price index	GDP

## Construction of Confidence Indicators

### Selection of potential indicators

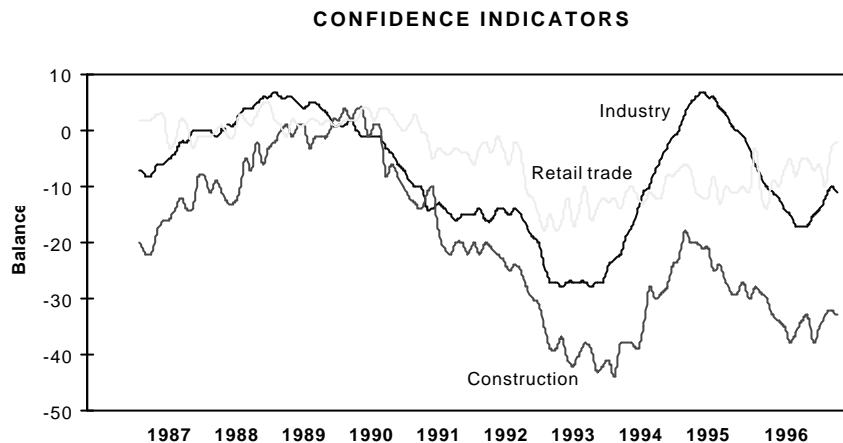
- *Select* the potential indicators i.e. balance series in a particular survey
- Take *linear combinations* of the balance series from one and up to the number of selected potential indicators
- Use *equal weights* for aggregation of all combinations of selected indicators

## Construction of Confidence Indicators

### Evaluation of indicators

- *Regress* all combinations of selected indicators *against the reference series* (change over same period previous year)
- *Select* the combination of indicators with the best results i.e. *high correlation coefficient* and *leading timing relationship*

## Confidence indicators



Source: Harmonised Business Surveys, European Commission

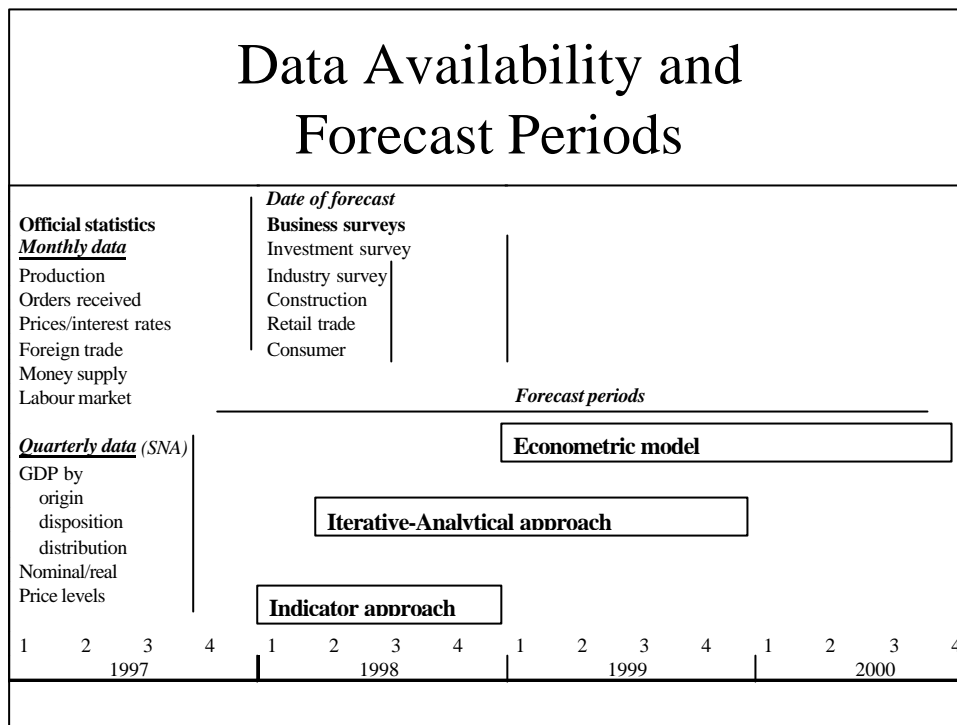
## Integration of Surveys into Economic Analysis

### Use of survey results

- Monitor the current situation
- Indicate short-term trends
- Develop cyclical indicators
- Supply input to econometric models

### Approaches for cyclical analysis and forecasting

- Structural/econometric models
- The indicator approach



## The Cyclical Indicator Approach

### Main objective

- Predicting *cyclical turning points* in economic activity

### System requirements

- Definition of the cycle and selection of *reference series*
- Selection of cyclical indicators (leading, Coincident, lagging)
- Construction of composite indicators

## OECD LI by Subject Area

### Quantitative indicators

1	Production, stocks, orders	8%
2	Construction, sales and trade	11%
3	Labour market	3%
4	Prices cost and profits	7%
5	Money, financial	29%
6	Foreign trade	10%

### Qualitative indicators

1	Business and consumer surveys	31%
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## Presentation of BTS Results

- Identification of Different Users
- Characteristics of Different Users
- Presentation of Survey Results to Different Users

## Potential Users of BTS Results

- Economists, researchers and analysts in general
- Respondents to the surveys
- Senior executives in business generally
- Senior civil servants responsible for government policy
- Senior personal in banks and financial institutions
- The press and other media

## Two Main Groups of Users

- Analysts including
  - 1 *Economists*
  - 2 *Researchers* and other analysts in general
  - 3 *Respondents* to the surveys
- Executives and other potential users

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## Business Survey Reports for Different users

Reports/users	Focus of information	Content
Press release	Main features	Text, survey characteristics
Executives	Main features	Text, graphs, survey characteristics Interpretation of results
Analysts	Overview Main features by sectors	Text, graphs, tables Detailed data Survey characteristics Interpretation of results Methodological information
Respondents	Overview Main features by sectors Enterprise specific information	Text, graphs, tables Detailed data Special tabulations Survey characteristics Interpretation of results Methodological information

### BUSINESS AND CONSUMER TENDENCY SURVEYS IN LATIN AMERICA

Source: Centre for International Research on Economic Tendency Surveys (CIRET)

Country	Source	Survey Type	Since	Frequency	Sample Size
Argentina	Fundacion de Investigaciones Economicas Latinoamericanas (FIEL), Buenos Aires	BS	1968	Monthly	600
Bolivia	Banco Central de Bolivia, La Paz	BS	1980	Quarterly	500
Brazil	Falha de Sao Paulo	BS		Weekly	500
	Fundacao Getulio Vargas, Instituto Brasileiro De Economia/ Centro de Estudos Tendencias, Rio de Janeiro	BS	1966	Quarterly	5 500
Chile	Registro Nacional de Comerciantes, Pequenos Industriales y Artesanos de Chile, Santiago	BS	1974	Monthly	2 000
	Servicio de Cooperacion Tecnica, Division de Estudios, Santiago	BS	1974	Quarterly	
Colombia	Instituto Fedesarrollo, Bogota	BS	1979	Monthly	1 200
Ecuador	Banco Central del Ecuador and Junta Nacional De Planificacion, Quito	BS	1975	Quarterly	1 000
Mexico	Banco de Mexico, Mexico	BS	1973	Monthly	1 000
Venezuela	Banco Central de Venezuela, Caracas	BS	1980	Quarterly	430