European Commission
Directorate General Economic and Financial Affairs

The EU’s Composite Business Cycle Indicators

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Business and consumer surveys and short-term forecast (DG ECFIN A4.2)

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Outline

- Introduction to Composite Business Cycle Indicators
- EU sectoral confidence indicators
- EU Economic Sentiment Indicator
- EU Business Climate Indicator

- purpose
- construction
- performance
Introduction to Composite Business Cycle Indicators

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"Confidence Indicators" (CIs):
- consumer CI
- services CI
- retail trade CI
- construction CI
- industry CI

operationalised as:
- high correlation with hard-data series
- for EU, euro area, MS, cand. countries

"Economic Sentiment Indicator" at aggregate level
at sectoral level
in the harmonised EU BCS programme:
- summarising overall perceptions and expectations in a one-dimensional index

Criteria for good composite indicators:
- good tracking of hard-data series
- smoothness of indicator

MCD in a nutshell
1) decomposing indicator into:
   - (i) trend-cycle component
   - (ii) irregular component (noise)
   - (iii) seasonal component

2) calculating mean absolute changes for:
   - (i) trend-cycle component
   - (ii) irregular component (noise)
   - month_t vs. month_t-1
   - month_t vs. month_t-2
   - month_t vs. month_t-3
   - etc.

3) determining after how many months trend-cycle component dominates over irregular component

Interpretation:
- e.g. MCD of 3:
  If indicator increases in January, I need to wait until April to be able to verify if the trend of the indicator really increases.

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Interpretation as...
- correlation with hard-data series
- low months-for-cyclical dominance (MCD)
### The EU's Sectoral Confidence Indicators

**Construction method:** arithmetic mean of (s.a.) balances from selected survey questions

% of positive replies minus % of negative replies

#### Selected questions:

<table>
<thead>
<tr>
<th>Industry</th>
<th>Services</th>
<th>Construction</th>
<th>Retail Trade</th>
<th>Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>order books - currently</td>
<td>business - last 3 months</td>
<td>order books - currently</td>
<td>business activity (sales) - last 3 months</td>
<td>household’s fin. position - next 12 months</td>
</tr>
<tr>
<td>stock of (finished) products - currently</td>
<td>demand for firm’s services - last 3 months</td>
<td>firm’s employment - next 3 months</td>
<td>volume of stock - currently</td>
<td>econ. situation in MS - next 12 months</td>
</tr>
<tr>
<td>production - next 3 months</td>
<td>demand for firm’s services - next 3 months</td>
<td>business activity (sales) - next 3 months</td>
<td>business activity (sales) - next 3 months</td>
<td>unemployment in MS - next 12 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>likelihood of saving money - next 12 months</td>
</tr>
</tbody>
</table>

#### Criteria:
- high correlation with reference series
- smoothness

Mostly forward-looking questions
Performance of the Confidence Indicators

Industry

Notabene: given substantial publication lead of CIs, the coincident correlation is practically a leading correlation.

<table>
<thead>
<tr>
<th>correlations:</th>
<th>MCDs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>coincident:</td>
<td>industrial production: 2</td>
</tr>
<tr>
<td>leading 1:</td>
<td>industry confidence: 1</td>
</tr>
<tr>
<td>leading 2:</td>
<td></td>
</tr>
</tbody>
</table>

|                   | 0.90 |
|                   | 0.88 |
|                   | 0.83 |
**Services**

- **Correlations:**
  - Coincident: 0.94
  - Leading 1: 0.95
  - Leading 2: 0.94

- **MCDs:**
  - Services value added growth: n/a
  - Services confidence: 2

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Introduction to Composite Business Cycle Indicators – EU sectoral confidence indicators – EU Economic Sentiment Indicator – EU Business Climate Indicator
Construction

Introduction to Composite Business Cycle Indicators – EU sectoral confidence indicators – EU Economic Sentiment Indicator – EU Business Climate Indicator

**Correlations:**
- Coincident: 0.70
- Leading 1: 0.69
- Leading 2: 0.65

**MCDs:**
- Constr. production: 5
- Constr. confidence: 2
Retail Trade

<table>
<thead>
<tr>
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<th>MCDs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>coincident:</td>
<td></td>
</tr>
<tr>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>leading 1:</td>
<td></td>
</tr>
<tr>
<td>0.75</td>
<td>n/a</td>
</tr>
<tr>
<td>leading 2:</td>
<td>2</td>
</tr>
<tr>
<td>0.76</td>
<td></td>
</tr>
</tbody>
</table>

\[ \text{Retail Confidence (rhs)} \]

-30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30

-3 -2 -1 0 1 2 3


Consumption growth | Retail Confidence (rhs)
Consumers

<table>
<thead>
<tr>
<th>correlations:</th>
<th>MCDs:</th>
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<tbody>
<tr>
<td>coincident: 0.89</td>
<td></td>
</tr>
<tr>
<td>leading 1: 0.91</td>
<td></td>
</tr>
<tr>
<td>leading 2: 0.91</td>
<td></td>
</tr>
<tr>
<td>private consumption: n/a</td>
<td></td>
</tr>
<tr>
<td>cons. confidence: 1</td>
<td></td>
</tr>
</tbody>
</table>
The EU's Economic Sentiment Indicator (ESI)

purpose:
summarising overall economic developments, in all 5 surveyed sectors (industry, services, etc.)

calculation method:
15 balance series of the 5 sectoral CIs:
- seasonally adjusted
- standardised

allocating weights per sector:
Industry: 40% ; Services: 30% ; Consumers: 20% ; Construction: 5% ; Retail Trade: 5%

individual INDU question has weight of 13.3% (= 40% / 3 questions)

calculation of arithmetic mean of weighted balances

standardisation of the ESI and:
- addition of 100
- multiplication by 10

values >100 indicate above-average economic sentiment
2/3 of observations will be in the interval [90 ; 110]
(assuming normality)
Performance of the ESI

<table>
<thead>
<tr>
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<th>ESI:</th>
<th>EMU CLI:</th>
<th>Ifo:</th>
<th>PMI:</th>
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<tr>
<td>coincident:</td>
<td>0.92</td>
<td>0.83</td>
<td>0.50</td>
<td>0.84</td>
</tr>
<tr>
<td>leading 1:</td>
<td>0.92</td>
<td>0.84</td>
<td>0.50</td>
<td>0.88</td>
</tr>
<tr>
<td>leading 2:</td>
<td>0.91</td>
<td>0.83</td>
<td>0.49</td>
<td>0.91</td>
</tr>
<tr>
<td>leading 2:</td>
<td>0.88</td>
<td>0.80</td>
<td>0.46</td>
<td>0.92</td>
</tr>
</tbody>
</table>

GDP growth (monthly, y-o-y)
ESI (EA, monthly levels)
EMU CLI - Normalised / Quantum (non-additive or stock figures) SA - Euro area
Ifo Business Survey, Total Industries, Business Climate Normalised (2005), SA - Germany
PMI - Normalised (monthly levels) - Euro Area
The EU's Business Climate Indicator (BCI)

**purpose:**
timely tracking of IP/gross value added growth in the manufacturing sector

**components:**
5 balance series from the industry survey:
- production last 3 months
- production next 3 months
- order books currently
- export order books currently
- stock of finished products currently

conducting **factor analysis:**
- only one factor retained

(*assumption is: business cycle can be represented by a single variable*)
Introduction to Composite Business Cycle Indicators – EU sectoral confidence indicators – EU Economic Sentiment Indicator – EU Business Climate Indicator

Performance of the BCI

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Further information on the EU's Composite Business Cycle Indicators

methodological User Guide (March 2014):

all time-series free for download:
http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm

Thanks for your attention!