THE PERFORMANCE OF THE CBI COMPOSITE GROWTH INDICATOR

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INTRODUCTION AND BACKGROUND
Introducing the CBI Growth Indicator

- Launched in January 2014
- A composite of three of the CBI’s qualitative business surveys, weighted according to their share in UK GVA:
  - the Industrial Trends Survey (ITS, covering manufacturing);
  - the Distributive Trades Survey (DTS, covering retail, wholesale and motor trades);
  - and the Service Sector Survey (SSS, covering business, professional and consumer services).
- Reporting on the trend in output over the past three months and the expected trend over the coming three months
The CBI Growth Indicator and the UK Economic Sentiment Indicator

- The CBI’s surveys are also used in the construction of the UK ESI, so there are similarities, but also key differences:
  - Different coverage – the UK ESI additionally incorporate construction and consumer surveys produced by Experian and Gfk UK; but doesn’t include the wholesale sector.
  - The ESI is not just an output indicator, but a composite of indicators on stocks, orders and the business climate, etc.
  - The ESI uses fixed weights that do not bear relation to GVA shares
  - The ESI data are seasonally adjusted whereas the Growth Indicator is not – the implications of this are explored in the following section.
- The CBI and Commission composites are compliments, not substitutes
Key aims for the investigation

● The report we are submitting to this workshop is a thorough statistical audit of the CBI Growth Indicator

● Key question: **Does the Growth Indicator’s simple and intuitive construction achieve the key results expected from a composite:**
  - Maintaining low seasonality (since we don’t seasonally adjust)
  - A reduction in volatility compared to the individual component surveys
  - An improvement in data-matching performance with official data on UK economic growth

● We double-check these findings by trying a slightly more sophisticated but less transparent weighting methodology – principal components analysis (PCA)
KEY FINDINGS
Aggregating the CBI surveys does not introduce seasonal distortions

- The majority of respondents to CBI *answering practices surveys* say that they are able to exclude seasonal variation (54% and 82% in the ITS and SSS respectively); and applying algorithmic seasonal adjustment to the data makes little difference.

- But it is worth testing the composite Growth Indicator for seasonal patterns, since any minor common seasonality in the component series may be amplified by aggregation.

- In practice, as seen opposite, carrying out algorithmic seasonal adjustment on the Growth Indicator series has little practical impact, and seasonal dummies are not significantly different from zero.

- Advantages of no seasonal adjustment: see how participants understand seasonal variation; and avoid revisions.
A straightforward aggregation of the CBI surveys successfully reduces volatility…

• Our volatility analysis uses the months for cyclical dominance (MCD) technique, which measures the average number of months required before random moves in the data are larger than moves in the underlying trend.

• The Growth Indicator has similar or lower volatility than its component surveys and similar volatility to the equivalent official series. This suggests that aggregating the data successfully removes volatility without resorting to other smoothing measures or aggregating multiple business indicators.

• Rolling analysis further that the Growth Indicator tends to have volatility at least as low as each component survey at any point in time.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>MCD</th>
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<tbody>
<tr>
<td>GROWTH INDICATOR (COMPOSITE)</td>
<td>3</td>
</tr>
<tr>
<td>ITS (MANUFACTURING)</td>
<td>3</td>
</tr>
<tr>
<td>DTS (DISTRIBUTION)</td>
<td>4</td>
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<tr>
<td>SSS (SERVICES)</td>
<td>4</td>
</tr>
<tr>
<td>ONS (OFFICIAL DATA)</td>
<td>3</td>
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...and a stronger performance in matching and predicting the official data

- The relationship between the equivalent official data for the Growth Indicator and each component survey was benchmarked to a contemporaneous correlation coefficient.

- All of the CBI series enjoy firmly positive relationships with the official data, but the Growth Indicator has a somewhat stronger relationship with its official equivalent than the DTS or SSS, even though those together comprise around 82% of its weight.

- Further benchmarking with a simple error correction model shows that the Growth Indicator has a lower average error than any of its component surveys.

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<tbody>
<tr>
<td>GROWTH INDICATOR</td>
<td>0.75</td>
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<tr>
<td>ITS (MANUFACTURING)</td>
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<td>DTS (DISTRIBUTION)</td>
<td>0.60</td>
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<tr>
<td>SSS (SERVICES)</td>
<td>0.68</td>
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</table>
…and a stronger performance in matching and predicting the official data

- We also examined the impact of using principal component analysis (PCA) to combine the CBI surveys. PCA may be better at filtering extraneous noise and the irregular component from the data, thus reducing volatility – but it is less intuitive and transparent than a straightforward GVA weighting.

- The resulting first principal component is plotted against the weighted aggregate Growth Indicator opposite. In practice, there is very little difference between the two methods – and it performs similarly on the volatility and data-matching metrics.

- Overall, then, the differences in quality of results between the two methods is marginal. It is appropriate, therefore, to use a weighted aggregate for the CBI Growth Indicator given its added clarity and transparency.
The CBI Growth Indicator uses a deliberately straightforward methodology, with no seasonal adjustment (beyond that done by participants), inclusion of output data only, and weights set by actual shares in GVA.

This thorough statistical audit of the CBI Growth Indicator showed that:
- Seasonality remains low after aggregation
- Aggregation successfully reduces volatility and data-matching performance without requiring further statistical adjustment
- A more sophisticated but less transparent weighting method (PCA) offers little additional benefit

This clarifies the advantages of the Growth Indicator methodology
- Clear and intuitive relation with official data and the real economy – easy to identify the meaning of the data and the sectoral drivers of growth
- No revisions since seasonal adjustment is done by participants
- On the other hand, the UK ESI encompasses a wider range of data and sectors and its extra statistical processing helps limit volatility further
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