OECD CLI Zone Aggregation Methodology

This document describes the zone aggregation methodology for the nine indicators in the OECD Composite Leading Indicator (CLI) framework. The described methodology is applied starting from February 2010. Six indicators are calculated as weighted averages of the country indicators:

- the amplitude adjusted CLI
- the normalised CLI
- the ratio to trend of the reference series
- the trend of the reference series
- the normalised reference series

The indicators for zones are calculated as annually chain-linked *Laspeyres* indices with the following formula:

$$Z_{a,t} = Z_{a,t-1} \frac{\sum_{i=1}^{n} w_{a-1,i} \left(\frac{C_{a,t,i}}{\bar{C}_{a-1,i}} \right)}{\sum_{i=1}^{n} w_{a-1,i} \left(\frac{C_{a,t-1,i}}{\bar{C}_{a-1,i}} \right)}$$

- $Z_{a,t}$ is the value of the final zone indicator in year a month t
- $w_{i,a-1}$ is the weight of country i from year $a-1$
- $C_{a,t,i}$ is the composite leading indicator from country i from period t
- $\bar{C}_{a-1,i}$ is the average value of the composite leading indicator from country i from year $a-1$

The zones are annually chain-linked *Laspeyres* indices where the country weights, $\{w_{i,a-1}\}$, for each individual link are the previous year's gross domestic product based on purchasing-power-parity (PPP) valuation of country GDP, in billions of current international dollar. Weights between 1955 and 1981 refer to the GDP PPP value in 1980. The country average values, $\{\bar{C}_{a-1,i}\}$, are calculated as the average of the country's composite leading indicator from the previous year. The linking point is February of each year.

The source of the weights data is the International Monetary Fund's World Economic Outlook (WEO) database. The Purchasing Power Parity (PPP) estimates are produced by the International Comparisons Program (ICP). The PPP exchange rate estimates, maintained and published by the World Bank, the OECD, and other international organizations, are used by WEO to calculate its own PPP weight time series. For more information, you can go to the World Bank website. Under the section "Statistics and Data", there is a link to ICP (International Comparison Program) that is about PPP surveys and methodologies.

The chain-linked indicators are scaled to match the average level of the components in the OECD base year, which is year 2015. Formally, this implies selecting Z_0 such that $Z_B = \Sigma_i w_{i,B} C_{i,B}$ where B=2015.

A zone aggregate is calculated if the overall weight of the available components is greater than 60%.

In order to preserve the relationship between different forms of the indicators, the trend restored CLI is calculated as the product of the amplitude adjusted CLI and the trend of the reference series.

Finally the 12-month rate of change of the trend restored CLI and the reference series is derived from the corresponding level series.

The calculation schema of the indicators

Pure cyclical series

| CLI amplitude adjusted | CLI normalised | | Reference series ratio to trend | Reference series normalised |

Trending series

Reference series trend

CLI trend restored

Reference series original

Growth rate series

CLI 12mth rate of change

Reference series 12mth rate of change

Weighted average (chain linked)
Composed
Derived