

The recent economic and financial crisis has increased the spotlight on the OECD's CLI and indeed broadened its base of users beyond its traditional specialised audience. To respond to the needs of this broader base, the OECD has decided to produce this note that provides a more accessible and less technical explanation of the CLI and the ways in which it should be interpreted.

The purpose of the OECD CLIs

The OECD system of composite leading indicators, first developed in the 1980s, is designed to give **early signals of turning-points** in economic activity.

What do we mean by economic activity?

The OECD CLI system uses the monthly index of industrial production (IIP) as a proxy measure for economic activity. The CLI system focuses on the **business cycle**, defined as the difference between the smoothed IIP data and its long-term trend. OECD CLIs aim to predict turning-points in this business cycle estimate.

Why is the business cycle defined as the difference in economic activity from its trend level rather than based on a smoothed picture of economic activity?

The presence of a trend in economic activity can distort evaluations of cyclical events. Removing these trends (de-trending) provides a better measure of underlying movements in the business cycle. Policy designed to affect trend growth is very different from policies reacting to business cycle fluctuations.

Another important reason for de-trending is that cyclical patterns across countries with different potential trends can be compared in a more meaningful way.

What is the CLI?

The CLI for any given country is composed from a set of selected economic indicators whose composite provides a robust signal of future turning points.

How should we interpret the CLIs?

A turning-point in the CLI will generally signal a turning-point in the business cycle in 6-9 months. However lead times sometimes fall outside of this range and turning points are not always correctly identified.

On top of identifying turning-points, CLIs also have the property of **moving in the same direction** as the business cycle. However the CLI is optimised to identify turning points and **not for judging the speed or strength of a recovery or downturn** in the business cycle; and users should not interpret it in this way. A very high or low CLI for example cannot be interpreted as an indication of very high or low levels of economic activity or growth. It merely provides a strong signal of the phase a country is likely to be in its business cycle in the near future.

Although the values of the CLI (i.e. the headline amplitude adjusted CLI) are conceptually similar to business cycle projections, they should not be interpreted as forecasts of the business cycle. The reason is that the CLI is optimised to detect turning points, not the levels of the IIP reference series. At the same time a value of 105 in the de-trended IIP means that industrial production is 5% above its long-term level, implying a positive output gap¹.

¹ The output gap is the difference between actual GDP and potential GDP as a percent of potential GDP. Potential GDP is the level of output that an economy can produce at a constant inflation rate.

Importantly, and this is particularly relevant in the context of the current economic climate where the recent crisis has created uncertainty about trends, if estimates of trend economic activity fall, the output gap shrinks and, so, values of the IIP greater than 100 can arise during periods of trend decline. Similarly a value of 95 would mean that production is 5% below its long-term level, with a negative output gap.

How do the OECD CLIs compare to OECD GDP and output-gap projections?

The OECD CLIs published monthly by the OECD Statistics Directorate and the GDP projections published twice per year by the OECD Economics Department both refer to the business cycle but they differ in many aspects.

The OECD GDP projections refer to a precise time-horizon and give a numerical value. The projections are based on macro-models of countries linked together, and not estimated in isolation. They are conditional forecasts, based on assumptions on the future evolution of commodity prices, policy actions and etc. Moreover, these projections are based on detailed analysis of the economy and they involve a considerable amount of expert judgement and a “reality check” with national experts.

The OECD CLIs are event forecasts, where the forecasted event is the turning-point in economic activity as measured by the de-trended IIP. These forecasts are calculated without modelling the interaction between countries and they are based solely on historical data, without invoking expert judgement.

The OECD CLIs for December 2009 project a recovery in economic activity for all OECD countries. In the case of several major OECD economies, the **CLIs** not only signal that we are now approaching a trough but also that the **recovery** could be **strong** enough to raise production above its long term level.

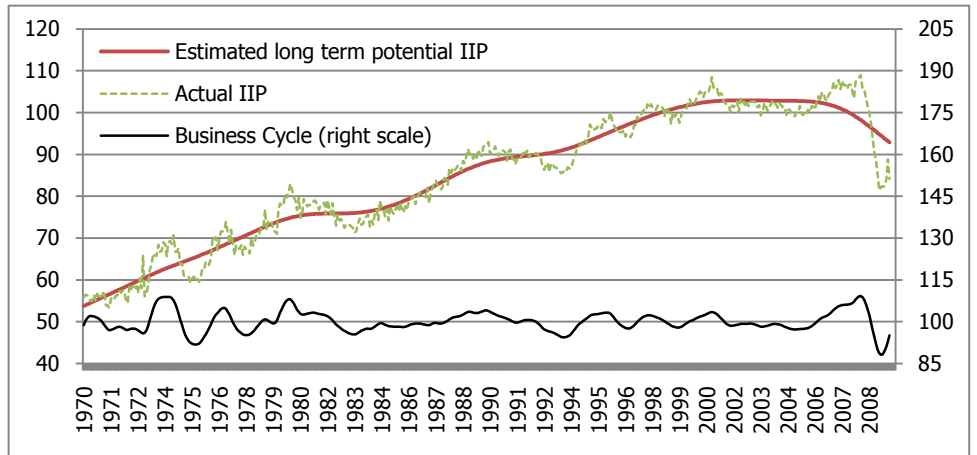
But some users have struggled to reconcile this message with the observation that the IIP in most countries has merely flattened out, after the severe drop of recent months, or is showing only mild signs of recovery but still at historically low levels.

How to reconcile the CLI with recent industrial production data?

The two positions are not however contradictory. The important distinction is that the CLI provides an indication of cyclical activity relative to trend.

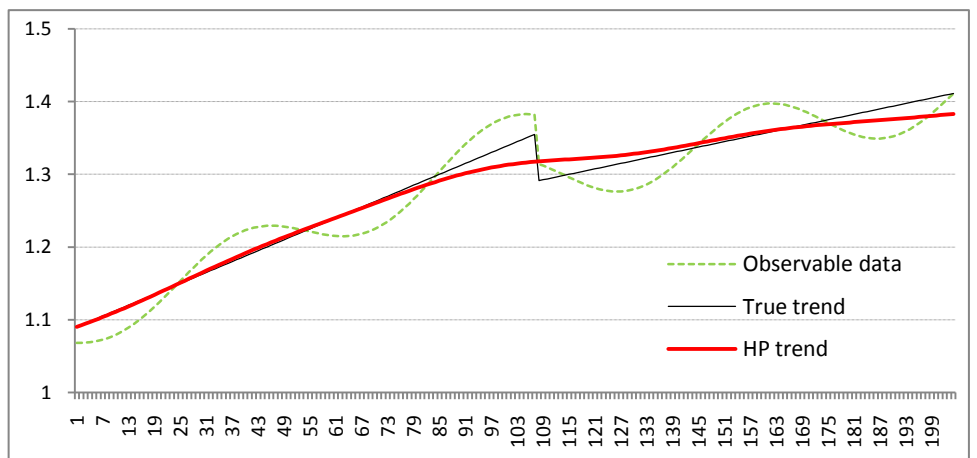
First, the CLIs show **projections** of economic activity with respect to **long term potential**; the levels of which are likely to have been affected (downwards) by the recent economic shock. This backdrop of falling trends means that projections in business cycles that point upwards cannot be interpreted as meaning that forecasts of absolute (non-detrended) levels of the IIP will also be upward.

The graph below illustrates this point. It shows the observed IIP, estimated trend of the IIP, and the business cycle of Italy (measured as the ratio of the trend and the smoothed IIP). The graph shows the unprecedented drop in the estimated long-term trend levels starting from 2007 and, despite only a marginal improvement in the actual IIP series, it also shows a near complete recovery in the business cycle (i.e. it approaches 100, which would indicate a return to long term potential level – but, importantly, at lower long term levels.)



Is this downward sloping trend estimate realistic?

Does the downward sloping trend estimate mean that long term growth in economic activity will be negative forever? Certainly not. It is a local phenomenon, most likely due to the fact that the economic shock causes a permanent drop in the level of potential production, coupled with the difficulties inherent in projecting trends forward from the end of a sample. Of course, when shocks such as this occur, different views of its impact on the long term trend can occur. Trend estimation in the OECD CLI system is based on the Hodrick-Prescott filter, which, like many other filters, has its limitations. The graph below illustrates these.



The thick black line represents the true production potential (which is unobservable in a real life application), the green line shows the observed production (the combined result of the business cycle and trend) and the red line shows the HP-filter's trend estimate. It is clear that the trend estimated with the HP-filter is underestimated before the shock overestimated immediately after, and at the end of the series it is estimated with an error. These imperfections do not considerably affect the identification of turning-points, but they do emphasise the need to exercise caution in using the CLI to draw conclusions about the size and the speed of recovery.