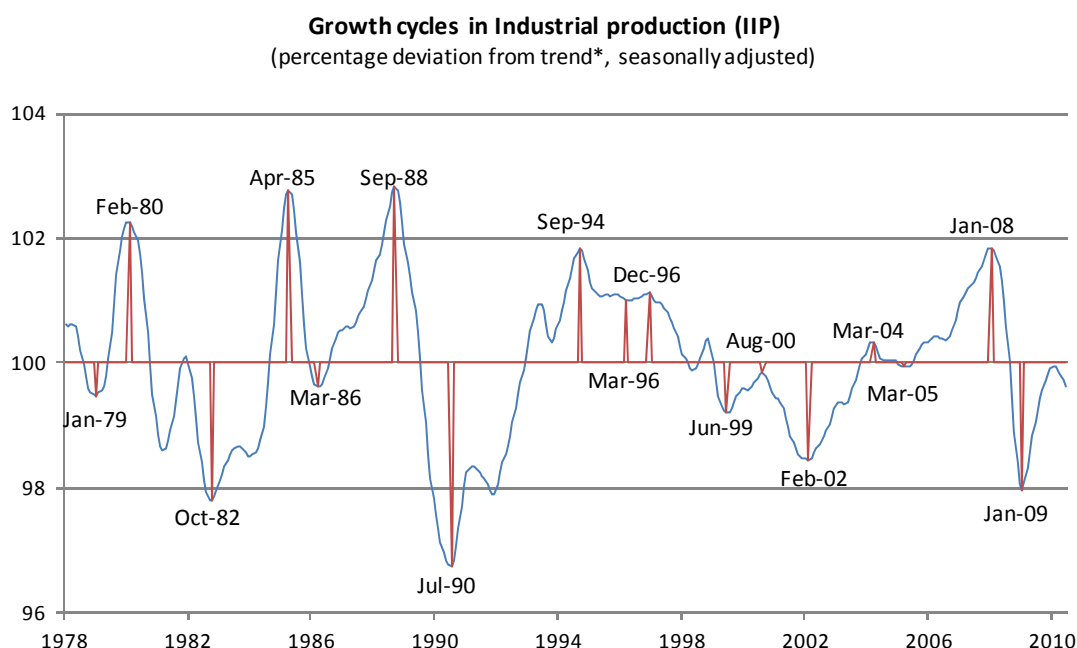


China

The reference series

The reference series used for constructing OECD Composite Leading Indicator (CLI) for **China** is the monthly index of industrial production (IIP). The IIP series starts in 1978, it is timely (t-2, able to meet the MEI publication deadline) and accessible from the MEI database. Furthermore, the IIP series is seasonally adjusted with the X12 method and has year 2005 as a base year.

Growth cycles in Industrial production



* For additional information on the de-trending method please refer to the [OECD CLI methodological note](#).

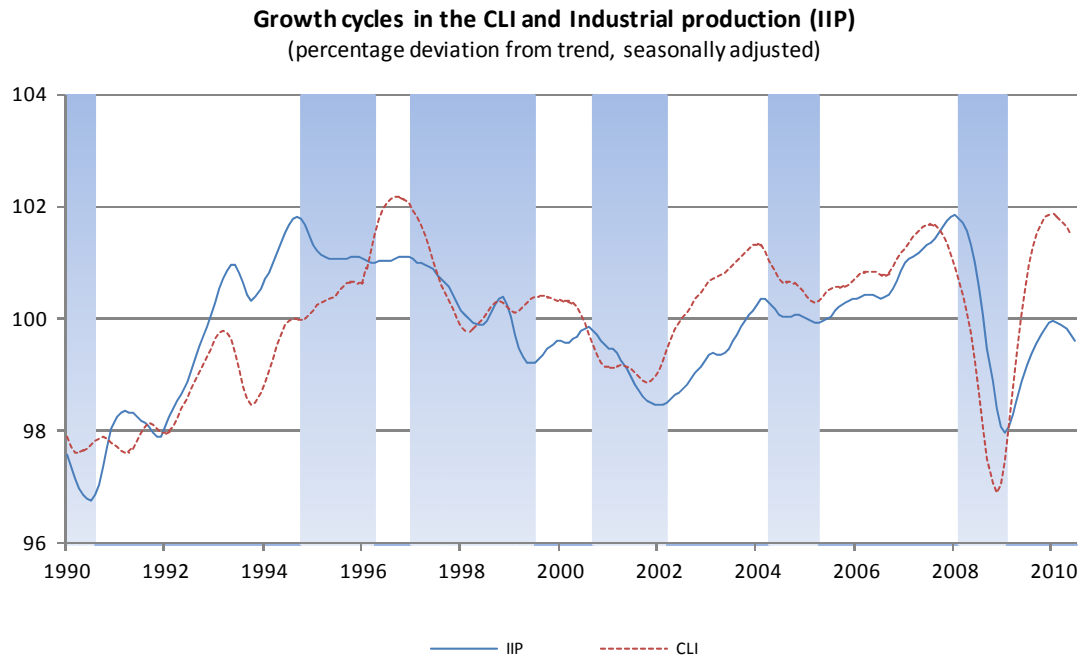
Over the period 1978 - 2009, industrial production registered seven growth cycles measured from peak to peak. The length of the cycles varies, as the duration of the shortest cycle was 27 months, while the longest cycle from 1988 to 1994 lasted for 72 months. The average duration of the cycles is 46 months with an average duration of the expansion phase of 26 months and an average duration of the contraction phase of 21 months.

The Composite Leading Indicator

The table below presents the turning point dates of the CLI and the reference series:

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
Trough		Jan-1979	
Peak		Feb-1980	
Trough		Oct-1982	
Peak		Apr-1985	
Trough		Mar-1986	
Peak		Sep-1988	
Trough		Jul-1990	
Peak		Sep-1994	
Trough		Mar-1996	
Peak	Sep-1996	Dec-1996	3
Trough	Mar-1998	Jun-1999	15
Peak	Aug-1999	Aug-2000	12
Trough	Oct-2001	Feb-2002	4
Peak	Jan-2004	Mar-2004	2
Trough	Mar-2005	Mar-2005	0
Peak	Jun-2007	Jan-2008	7
Trough	Nov-2008	Jan-2009	2

The CLI performs well in predicting the turning points of the reference series since it is calculated (i.e. 1990). While the mean lead is 6 months with a standard deviation of five months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.7) is also considered to be acceptable. The CLI for China did not miss or predict any extra turning points.



Shaded areas represent observed growth cycle downswings (measured from peak to trough) in the reference series, the industrial production.

The components of the composite leading indicator

The revised CLI for China contains six monthly and one quarterly leading indicators. Out of the seven component indicators, two were also included in the former CLI for China. These two indicators are: *IP Chemical fertilizer production* and *Production of motor vehicles*.

The financial indicator, *Monetary aggregate: M2* replaces Monetary aggregate: M1 that was included in the previous CLI for China. While *Monetary aggregate: M2* captures the same kind of information as M1 does, it has a longer lead that improves the overall performance of the revised CLI.

The real indicator, Production of cement, has been replaced with *Production of buildings*. Just like in the case of Monetary aggregates, *Production of buildings* reflects on the same domain of the economy as Production of cement (i.e. construction sector), but it fits better to the other selected components resulting more favourable leading properties of the revised CLI.

The three new components are: *Production of manufactured crude steel*, *5000 Industrial Enterprises: Diffusion Index: Overseas order level* and *Shanghai Stock Exchange: turnover*. All three of these new indicators perform well on all counts, as the number of missed and extra turning points is small and they also show stable leads with appropriate cross correlation coefficients and standard deviations. Moreover, the inclusion of these new components will also improve the sector coverage of the CLI, as the proportion of the real indicators decreases with presence of the business survey, *5000 Industrial Enterprises: Diffusion Index: Overseas order level* and the financial indicator, *Shanghai Stock Exchange: turnover*.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Revised</i>)	1990	t-2	8	0	0	6	5	2	0.7
IP Chemical fertilizer production	1983	t-2	14	5	5	9	6	7*	0.2
Production of manufactured crude steel	1997	t-2	5	1	1	10	5	3	0.8
5000 Industrial Enterprises: Diffusion Index: Overseas order level	1992	t-3	9	2	0	4	7	1	0.5
Production of buildings	1996	t-3	5	1	1	4	2	8	0.5
Monetary aggregate: M2	1990	t-2	10	5	3	5	4	3*	0.4
Shanghai Stock Exchange: turnover	1995	t-1	8	1	2	4	1	3	0.3
Production of motor vehicles	1983	t-2	14	3	3	7	6	2	0.7

* For *IP Chemical fertilizer production* and Monetary aggregate: M2 the reported peak lead (i.e. 7 and 3 months respectively) refers to the location of the peak correlation in the range of +/- 12 months instead of the default setting of +/-24 months.

Three component series have been dropped as a result of the revision process from the former CLI for China.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Former</i>)	1983	t-2	14	0	0	5	6	4	0.8
Monetary aggregate: M1	1990	t-2	10	1	2	2	6	2	0.5
Production of cement	1990	t-3	10	1	2	7	6	7	0.7
IP Chemical fertilizer production	1983	t-2	14	5	5	9	6	7*	0.2
Enterprise deposits	1978	t-2	16	6	5	0	4	4	0.6
Production of motor vehicles	1983	t-2	14	3	3	7	6	2	0.7

For *IP Chemical fertilizer production* the reported peak lead (i.e. 7 months) refers to the location of the peak correlation in the range of +/- 18 months instead of the default setting of +/-12 months.

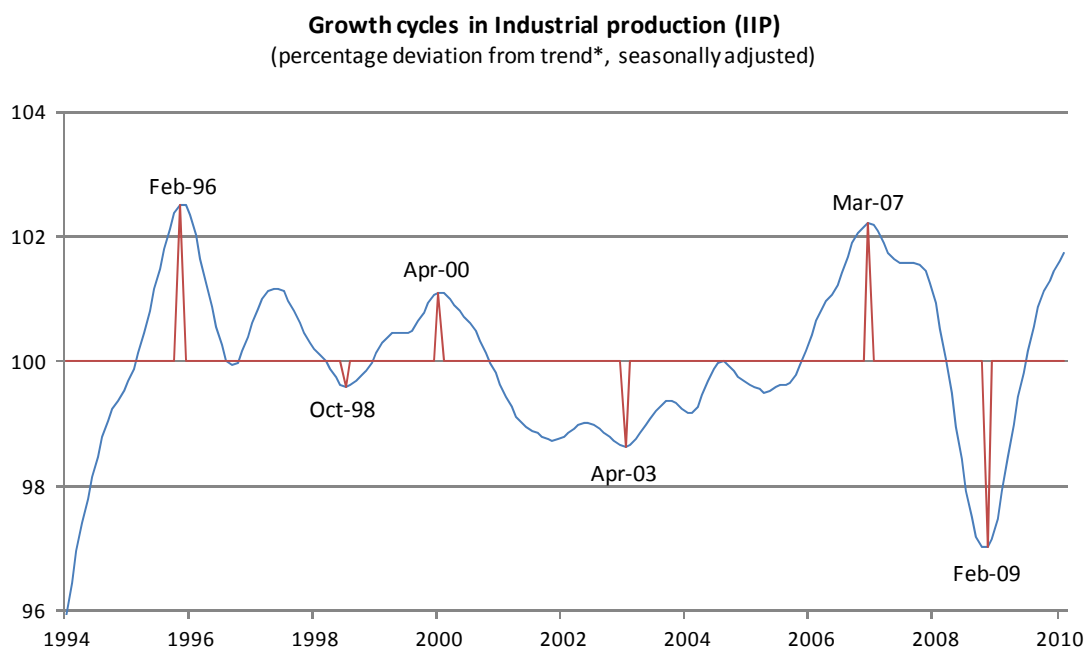
While the component series, *Monetary aggregate: M1* and *Production of cement* have been replaced with closely related indicators (i.e. Monetary aggregate: M2 and Production of buildings respectively), *Enterprise deposits* has been dropped due to its unsatisfactory leading characteristics. *Enterprise deposits* has not only too many missing and extra turning points, but it has a zero mean lead. As such it qualifies more for being a coincidental indicator rather than a leading one.

India

The reference series

The reference series used for constructing OECD Composite Leading Indicator (CLI) for **India** is the monthly index of industrial production (IIP). The IIP series starts in 1994, it is timely (t-3, able to meet the MEI publication deadline) and accessible from the MEI database. Furthermore, the IIP series is seasonally adjusted with the X12 method and has year 2005 as a base year.

Growth cycles in Industrial production



* For additional information on the de-trending method please refer to the [OECD CLI methodological note](#).

Over the period 1994 - 2009, industrial production registered only two growth cycles measured from peak to peak. While the duration of the first cycle (i.e. from 1996 until 2000) was 50 months, the second cycle (i.e. from 2000 until 2007) was longer as it lasted for 83 months.

The Composite Leading Indicator

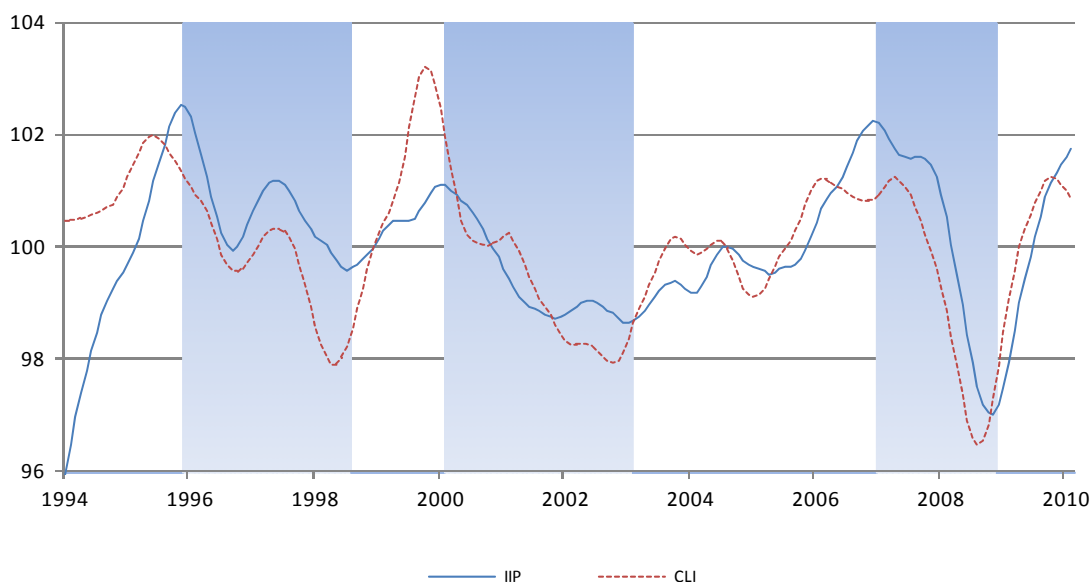
The table below presents the turning point dates of the CLI and the reference series:

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
Peak	Sep-1995	Feb-1996	5
Trough	Aug-1998	Oct-1998	2
Peak	Jan-2000	Apr-2000	3
Trough	Jan-2003	Apr-2003	3
Peak	Jan-2004		Extra
Trough	Apr-2005		Extra
Peak	Jul-2007	Mar-2007	-4
Trough	Nov-2008	Feb-2009	3

While the mean lead of the CLI is two months with a standard deviation of three months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient is 0.8.

As an only weakness the indicator predicted the peak of March, 2007 of the IIP with four month lag, for July, 2007, which is the reason for the relatively low mean lead of the CLI.

Growth cycles in the CLI and Industrial production (IIP)
(percentage deviation from trend, seasonally adjusted)



Shaded areas represent observed growth cycle downswings (measured from peak to trough) in the reference series, the industrial production.

The components of the composite leading indicator

The revised CLI for India contains six monthly leading indicators. Out of the five component indicators, two were also included in the former CLI for India. These two indicators are: *Monetary aggregate: M1* and *Composite stock price index (BSE Dollex)*.

The financial indicator, *Call money rate* replaces Deposit interest rate (lower bound) that was included in the previous CLI for India. While *Call money rate* captures the same kind of information as Deposit interest rate (lower bound) does, it fits better to the other selected component indicators, which results that the overall

performance of the revised CLI is more favourable with *Call money rate* included instead of Deposit interest rate (lower bound).

IIP Basic goods and IIP Intermediate goods are replaced with the real indicator, *IIP Durable goods*, since its statistical properties are more favourable with less missing turning points and more stable leading characteristics measured by the mean lead and the location of the peak of the cross correlation function.

The other two new components are: *Production of manufactured non metallic mineral products* and *Passenger car sales*. Both of these two real indicators perform very well on all counts, as the number of missed and extra turning points is small and they also show stable leads with appropriate cross correlation coefficients and standard deviations.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Revised</i>)	1994	t-2	6	0	2	2	3	4	0.8
IIP Durable goods	1994	t-3	6	1	1	4	3	3	0.6
Call money rate (<i>Inverted</i>)	1999	t-3	4	1	2	8	5	8	0.8
Production of manufactured non metallic mineral products	1994	t-3	6	1	3	4	6	3	0.5
Monetary aggregate: M1	1951	t-2	6	0	0	5	4	6	0.6
Passenger car sales	2001	t-2	3	0	2	6	4	2	0.5
Composite stock price index (BSE Dollex)	1991	t-1	6	2	3	2	1	0	0.5

Six component series have been dropped as a result of the revision process from the former CLI for India.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (Former)	1994	t-2	6	1	3	4	6	1	0.8
Manufacturing - Business Confidence Indicator	1996-2008	STOPPED	5	2	2	5	7	4	0.6
INR/USD exchange rate monthly average (Inverted)	1957	t-2	6	2	5	3	5	-2	0.6
Deposit interest rate (lower bound) (Inverted)	1997	t-2	4	2	2	8	2	11	0.4
ITS Imports c.i.f. total	1990	t-4	6	1	2	7	8	-4	0.6
IIP Basic goods	1994	t-3	5	1	4	0	1	0	0.8
IIP Intermediate goods	1994	t-3	6	1	3	3	4	0	0.9
Monetary aggregate: M1	1951	t-2	6	0	0	5	4	6	0.6
Composite stock price index (BSE Dollex)	1991	t-1	6	2	3	2	1	0	0.5

The component series, *Deposit interest rate (lower bound)*, *IIP Basic goods* and *IIP Intermediate goods* have been replaced with closely related indicators (i.e. *Call money rate* and *IIP Durable goods*).

Although the tendency survey, *Manufacturing - Business Confidence Indicator*, performed well as a leading indicator, it was stopped provided by the source. Subsequently it had to be dropped from the revised CLI.

The last two component indicators that do not form part of the CLI of India anymore are: *INR/USD exchange rate monthly average* and *ITS Imports c.i.f. total*.

In the case of *INR/USD exchange rate monthly average* the number of extra turning points are high and also the location of the peak of the cross correlation function and the mean lead differ too much, which is a strong signal for unstable leading characteristics.

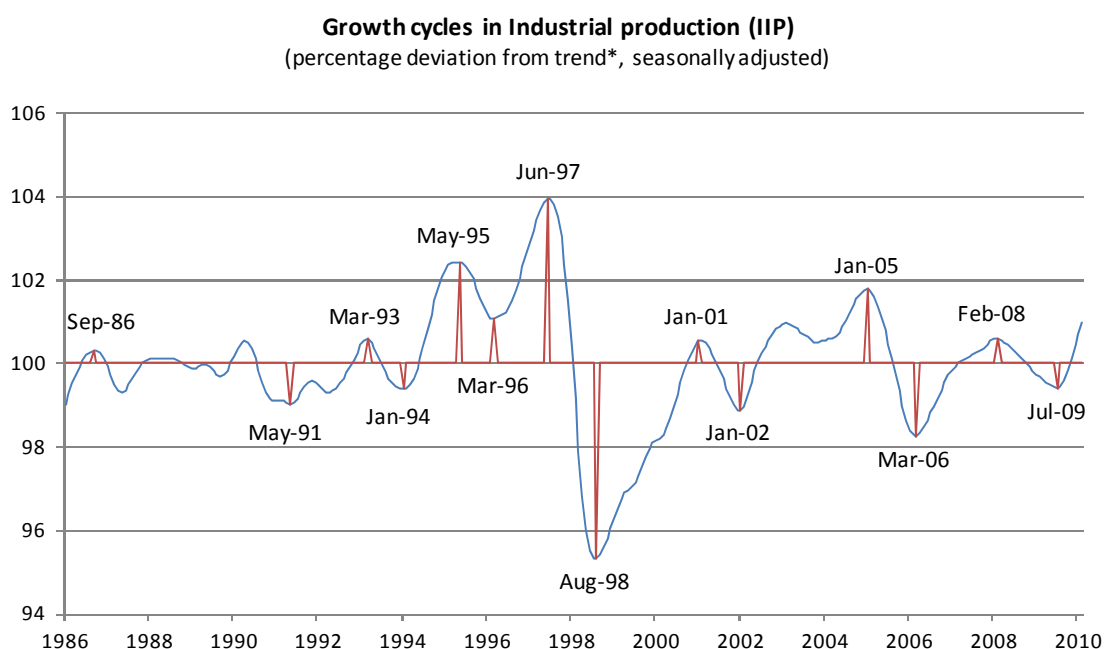
Although *ITS Imports c.i.f. total* has a long lead, its standard deviation is excessively high and also the difference between the location of the peak of the cross correlation function and the mean lead is too large.

Indonesia

The reference series

The reference series used for constructing OECD Composite Leading Indicator (CLI) for **Indonesia** is the index of production in total manufacturing, which is a proxy for the monthly index of industrial production (IIP). The IIP series starts in 1986, it is generally timely (t-2, able to meet the MEI publication deadline) and accessible from the MEI database. Furthermore, the IIP series is seasonally adjusted with the X12 method and has year 2005 as a base year.

Growth cycles in Industrial production



* For additional information on the de-trending method please refer to the [OECD CLI methodological note](#).

Over the period 1986 - 2009, industrial production registered six growth cycles measured from peak to peak. The outstandingly large swing in the period 1997-1998 demonstrates the period when the Asian financial crisis hit Indonesia.

While the duration of the shortest cycle was 24 months, the longest cycle lasted for 78 months. The average duration of the cycles is 43 months with an average duration of the expansion phase of 24 months and an average duration of the contraction phase of 19 months.

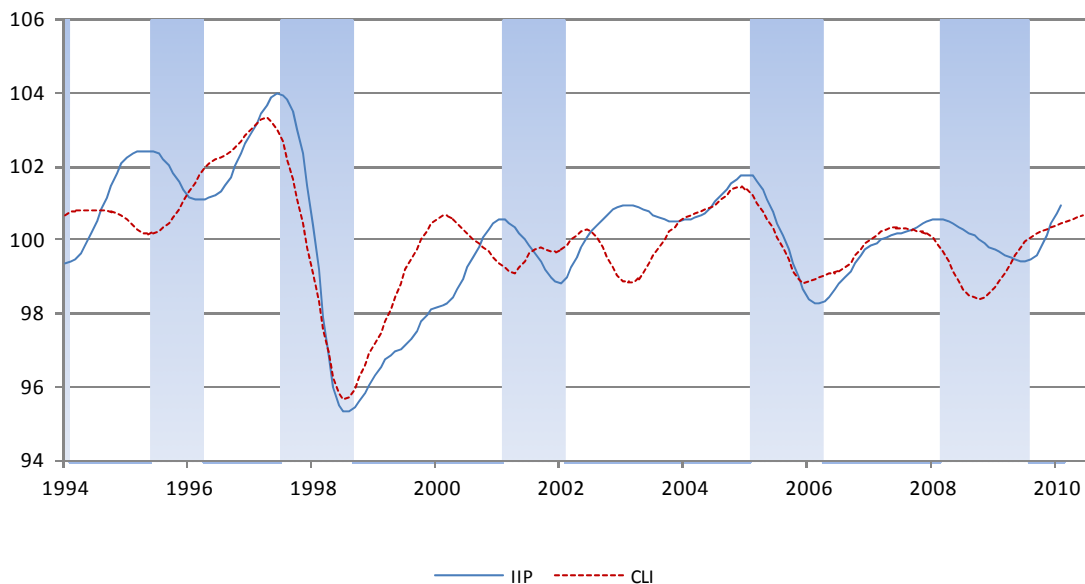
The Composite Leading Indicator

The table below presents the turning point dates of the CLI and the reference series:

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
Peak		Sep-1986	
Trough		May-1991	
Peak		Mar-1993	
Trough		Jan-1994	
Peak		May-1995	<i>Missed</i>
Trough	May-95	Mar-1996	10
Peak	Apr-97	Jun-1997	2
Trough	Jul-98	Aug-1998	1
Peak	Feb-00	Jan-2001	11
Trough	Apr-01	Jan-2002	9
Peak	Dec-04	Jan-2005	1
Trough	Dec-05	Mar-2006	3
Peak	Jun-07	Feb-2008	8
Trough	Oct-08	Jul-2009	9

The revised CLI for Indonesia performs better than its predecessor since it is calculated (i.e. 1994). While it has a mean lead of six months with a standard deviation of four months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.84). There is only one missed turning point (i.e. May, 1995) referring to the beginning of the series, all the following targeted turning points are predicted well in advance.

Growth cycles in the CLI and Industrial production (IIP)
(percentage deviation from trend, seasonally adjusted)



Shaded areas represent observed growth cycle downswings (measured from peak to trough) in the reference series, the industrial production.

The components of the composite leading indicator

Seven component series form part of the revised CLI for Indonesia.

There are two indicators, *JSX share prices* and *IDR/USD exchange rate end period* that remain part of the revised CLI. Both component series keep showing good leading characteristics with few missed or extra turning points.

The old component called Discount Rate has been replaced with another indicator in the same domain, *Central bank discount rate*. The major advantage of the new component named *Central bank discount rate* is its timeliness.

The other new components are: *Consumer confidence index*, *Producer Price Index/Wholesale Price Index*, *Tourists arrivals* and *Production of paper and paper products*.

Although the *Consumer confidence index* and the indicator called *Production of paper and paper products* differ in their timeliness, they both have good leading properties.

While the component *Producer Price Index/Wholesale Price Index* has excellent leading properties, its only weakness, the location of the peak of the cross correlation function, is balanced by the inclusion of the indicator representing the service sector (i.e. *Tourists arrivals*).

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator <i>(Revised)</i>	1994	t-1	10	1	0	6	4	3	0.8
JSX Share prices	1990	t-1	12	3	1	5	7	4	0.3
Central bank discount rate <i>(Inverted)</i>	1989	t-1	13	2	1	5	5	3	0.7
IDR/USD exchange rate end period <i>(Inverted)</i>	1993	t-3	8	0	0	8	5	3	0.8
Consumer confidence index	2001	t-1	5	1	3	8	5	2	0.3
Producer Price Index/Wholesale Price Index <i>(Inverted)</i>	1998	t-2	7	0	0	9	5	-24	0.4
Tourists arrivals	1994	t-2	8	2	2	1	4	2	0.5
Production of paper and paper products	1993	t-4	10	0	2	4	5	3	0.7

The former CLI for Indonesia contained five component series out of which two have been dropped due to unsatisfactory leading characteristics and one (i.e. *Discount Rate*) has been replaced with a more timely interest rate related series.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (Former)	1990	t-2	13	3	2	7	4	3	0.7
JSX Share prices	1990	t-1	12	3	1	5	7	4	0.3
Discount Rate (Inverted)	1990	t-3	13	2	0	5	5	2	0.7
IDR/USD exchange rate end period (Inverted)	1993	t-3	8	0	0	8	5	3	0.8
Japan: Small Business Survey: Sales tendency	1985	t-1	14	5	4	7	5	4	0.5
SDR Reserve assets	1971	t-4	14	3	3	6	5	5	0.2

Japan: Small Business Survey: Sales tendency and *SDR Reserve assets total* have not been included in the revised CLI. While *Japan: Small Business Survey: Sales tendency* has too many missed and extra turning points, the major weakness of *SDR Reserve assets total* is its low cross correlation coefficient.