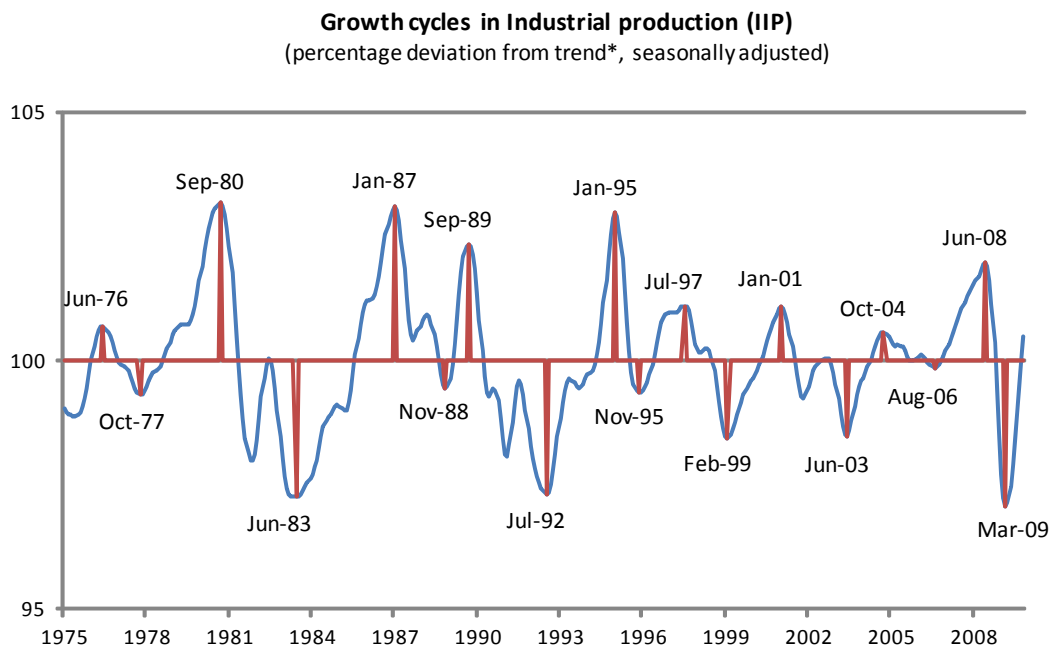


Brazil

The reference series

The reference series used for constructing OECD Composite Leading Indicator (CLI) for **Brazil** is the monthly index of industrial production (IIP) excluding construction. The IIP series starts in 1975, 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](#).

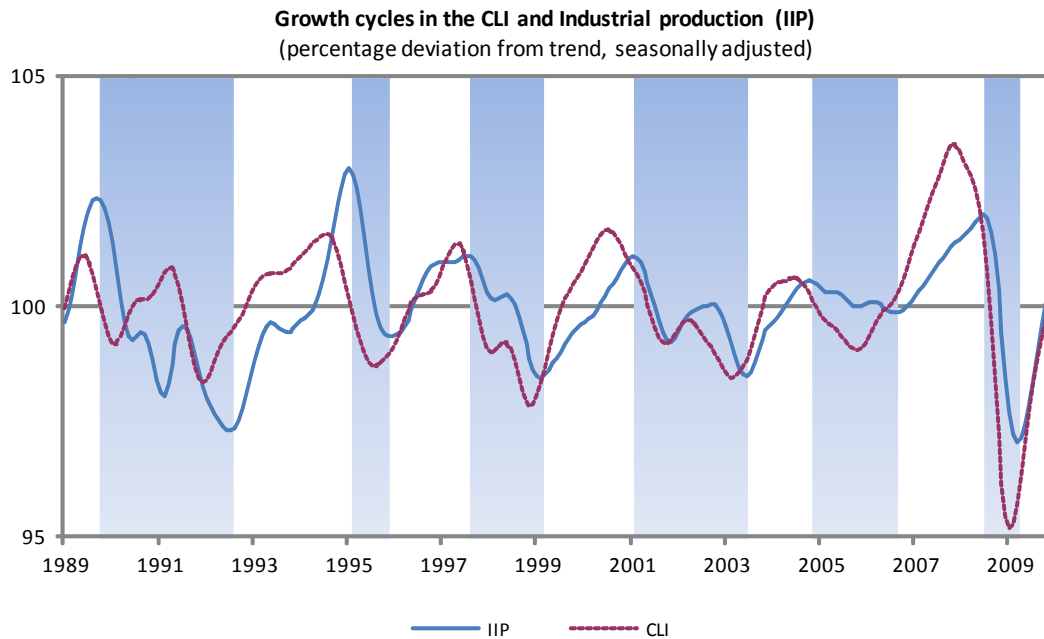
Over the period 1975 - 2009, industrial production registered eight growth cycles measured from peak to peak. The length of the cycles is relatively stable, as the duration of the shortest cycle was 30 months, while on the other hand the longest cycle from 1980 to 1987 lasted for 76 months. The average duration of the cycles is 48 months with an average duration of the expansion phase of 25 months and an average duration of the contraction phase of 23 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		Jun-1976	
Trough		Oct-1977	
Peak		Sep-1980	
Trough		Jun-1983	
Peak		Jan-1987	
Trough		Nov-1988	
Peak		Sep-1989	
Trough	Jan-1990		<i>Extra</i>
Trough		Jul-1992	<i>Missed</i>
Peak	Jul-1994	Jan-1995	6
Trough	Jul-1995	Nov-1995	4
Peak	Apr-1997	Jul-1997	3
Trough	Nov-1998	Feb-1999	3
Peak	Jul-2000	Jan-2001	6
Trough	Feb-2003	Jun-2003	4
Peak	Jun-2004	Oct-2004	4
Trough	Oct-2005	Aug-2006	10
Peak	Nov-2007	Jun-2008	7
Trough	Jan-2009	Mar-2009	2

The CLI seems to be appropriate to predict the turning points of the reference series since it is calculated (i.e. 1989). While there is a mean lead of five months with a standard deviation of two months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.72) is also considered to be good. The extra and the missed trough at the beginning of the historical cyclical pattern should not be considered as major deficiency of the CLI. A closer inspection reveals that the CLI performs well right from the start, as it predicts well the future movement of the reference series.



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 Brazil contains six monthly leading indicators. All six component series perform rather well, as the number of missed and extra turning points is small in case of all the component indicators. Moreover, all the component series 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>	1989	t-1	11	1	1	5	2	4	0.7
Share price index	1989	t-1	10	0	1	5	4	2	0.6
Manufacturing - Production: future tendency	1980	t-2	15	2	4	5	4	4	0.7
Manufacturing - Order books: level	1980	t-1	15	1	3	4	4	2	0.8
Monetary aggregate: M2 <i>(Inverted)</i>	1992	t-2	10	1	1	8	5	6	0.5
Discount rate <i>(Inverted)</i>	1996	t-2	7	0	0	5	4	4	0.6
Net trade (f.o.b. - f.o.b.) with EU	1989	t-1	11	3	2	7	4	8	0.4

The CLI for Brazil has been revised considerably, as four component indicators out of five have been dropped due to their unsatisfactory leading characteristics. The only component that forms part of both the former and

the revised CLI is *Share price index*. Notwithstanding some of the replacement indicators cover the same domains of the economy as the excluded ones did.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Former</i>)	1978	t-2	16	0	2	5	6	1	0.7
Share price index	1993	t-1	10	2	1	6	4	2	0.7
Production of total manufactured non-durable goods	1975	t-2	18	5	2	0	3	0	0.7
Manufacturing - Orders inflow or demand: future tendency	1980	t-4	15	2	5	3	6	4	0.5
Terms of trade	1978	t-2	16	6	7	4	7	1	0.4
Exports f.o.b. total	1964	t-2	18	10	8	3	6	-3	0.4

However, *Share price index* is included in the revised CLI, it has been modified to some extent. While in the former CLI the starting date of the series was 1993, in case of the revised CLI the series starts in 1989.

Production of total manufactured non-durable goods would decrease the average lead of the revised CLI, since it has the properties of a coincident indicator rather than a leading one. Subsequently, the component indicator has been left out from the revised CLI.

The business tendency survey, *Manufacturing - Orders inflow or demand: future tendency*, has been replaced by two closely related indicators (Manufacturing - Production: future tendency and Manufacturing – Order books: level) that have more favourable leading properties.

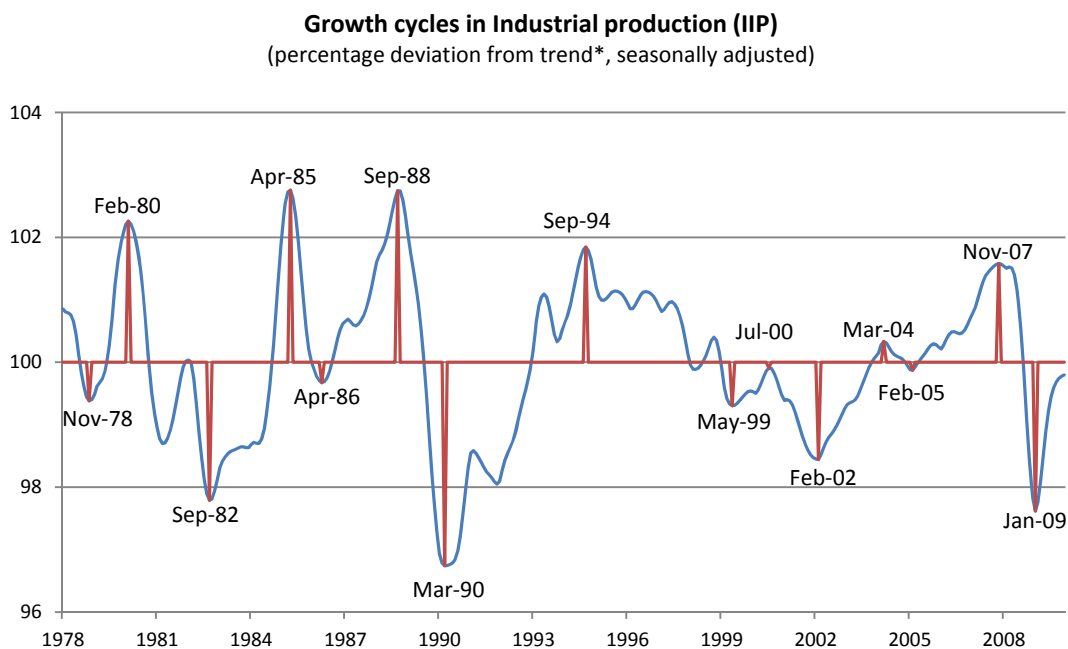
The two external indicators (*Terms of trade* and *Exports f.o.b. total*) of the former CLI have been dropped as well, since they show relatively short and unstable leads. The correlation with the reference series is weak and the standard deviation is rather high in both cases. However, in the revised CLI for Brazil the external sector is still going to be represented by the indicator named *Net trade with EU*.

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 six growth cycles measured from peak to peak. The length of the cycles is relatively stable, as the duration of the shortest cycle was 41 months, while on the other hand the longest cycle from 1988 to 1994 lasted for 72 months. The average duration of the cycles is 56 months with an average duration of the expansion phase of 31 months and an average duration of the contraction phase of 25 months.

The Composite Leading Indicator

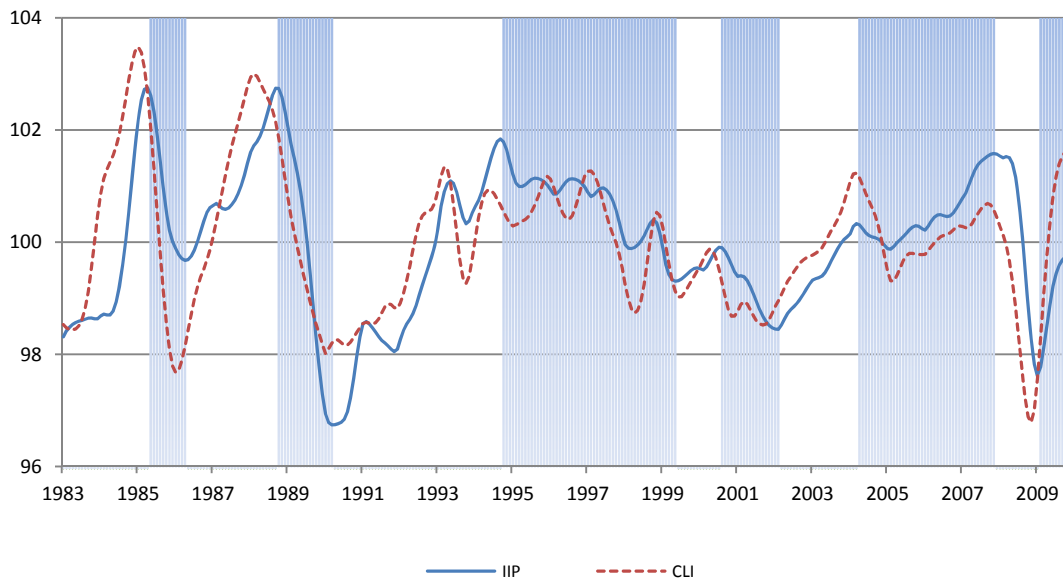
The table below presents the turning point dates of the CLI and the reference series:

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
Trough		Nov-1978	
Peak		Feb-1980	
Trough		Sep-1982	
Peak	Jan-1985	Apr-1985	3
Trough	Jan-1986	Apr-1986	3
Peak	Feb-1988	Sep-1988	7
Trough	Jan-1990	Mar-1990	2
Peak	Mar-1993	Sep-1994	18
Trough	Jan-1995		<i>Extra</i>
Peak	Feb-1997		<i>Extra</i>
Trough	Apr-1998	May-1999	13
Peak	Apr-2000	Jul-2000	3
Trough	Sep-2001	Feb-2002	5
Peak	Mar-2004	Mar-2004	0
Trough	Mar-2005	Feb-2005	-1
Peak	Sep-2007	Nov-2007	2
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. 1983). While the mean lead and its standard deviation are five months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.8) is also considered to be good.

As an only weakness the indicator predicted the trough of February, 2005 with one month lag, for March, 2005.

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 China contains five monthly leading indicators. Out of the five component indicators, two were also included in the former CLI for China. These two indicators are: *IP Chemical fertilizer production* and *Enterprise deposits*.

The financial indicator, *Monetary aggregate: M1* replaces *Monetary aggregate: M2* that has been included in the previous CLI for China. While *Monetary aggregate: M1* captures the same kind of information as *M2* does, 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 two new components are: *Production of Cement* and *Production of Motor Vehicles*. 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>)	1983	t-2	12	0	2	5	5	4	0.8
Monetary aggregate: M1	1990	t-2	8	1	4	3	6	2	0.6
Production of cement	1990	t-2	8	0	2	7	6	7	0.7
IP Chemical fertilizer production	1983	t-2	12	3	5	10	5	7*	0.3
Enterprise deposits	1978	t-2	14	6	6	0	3	4	0.6
Production of Motor Vehicles (10000 unit)	1983	t-3	12	3	3	3	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 +/-24 months.

Four 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	12	1	1	2	4	3	0.7
IP Chemical fertilizer production	1983	t-2	12	3	5	10	5	7*	0.3
IP Non-ferrous metals	1983	t-2	12	4	7	5	5	1	0.5
Cargo handled at ports	1983	t-2	12	6	5	5	6	0	0.6
Enterprise deposits	1978	t-2	14	6	6	0	3	4	0.6
Monetary aggregate: M2	1990	t-2	8	4	3	6	5	-20	0.6
Imports from Asia	1990	t-2	8	2	5	0	3	-1	0.5

The component series, *Monetary aggregate: M2* has been replaced by a closely related indicator, *Monetary aggregate: M1*, since *Monetary aggregate: M2* misses half of its targeted turning points and also its leading characteristics are worse.

The three component indicators, which have been dropped due to their unsatisfactory leading characteristics, are: *IP Non-ferrous metals*, *Cargo handled at ports* and *Imports from Asia*.

In case of *IP Non-ferrous metals* and *Cargo handled at ports*, not only the number of missing and extra turning points are high, but 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.

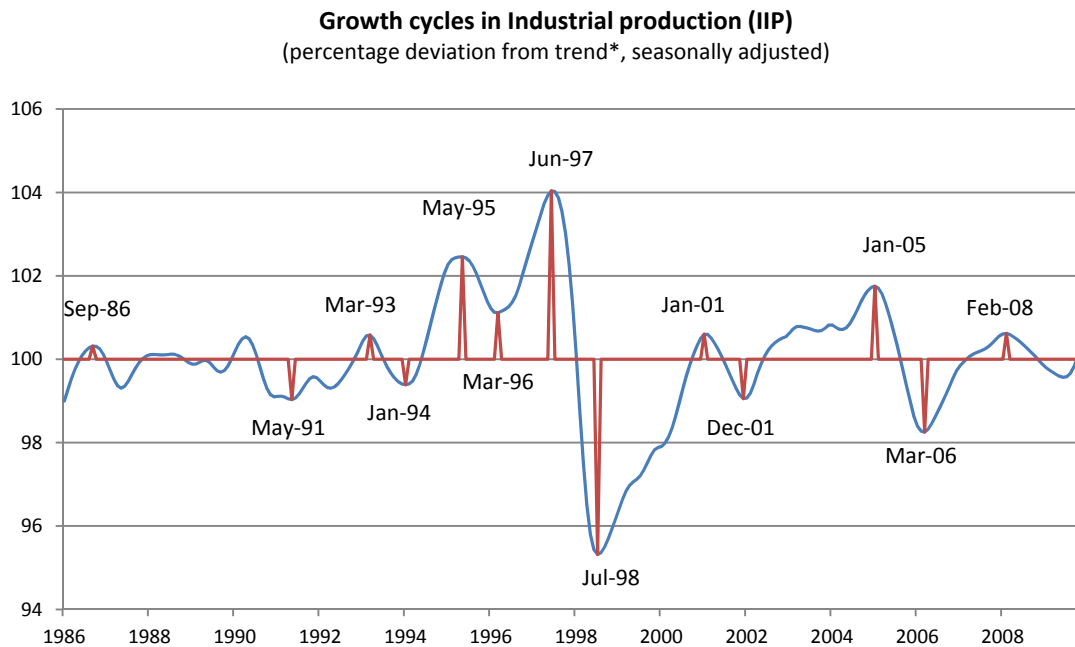
The component *Imports from Asia* has been excluded from the revised CLI for China, as it has the properties of a coincidental indicator.

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 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. The duration of the shortest cycle was 25 months, while 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.

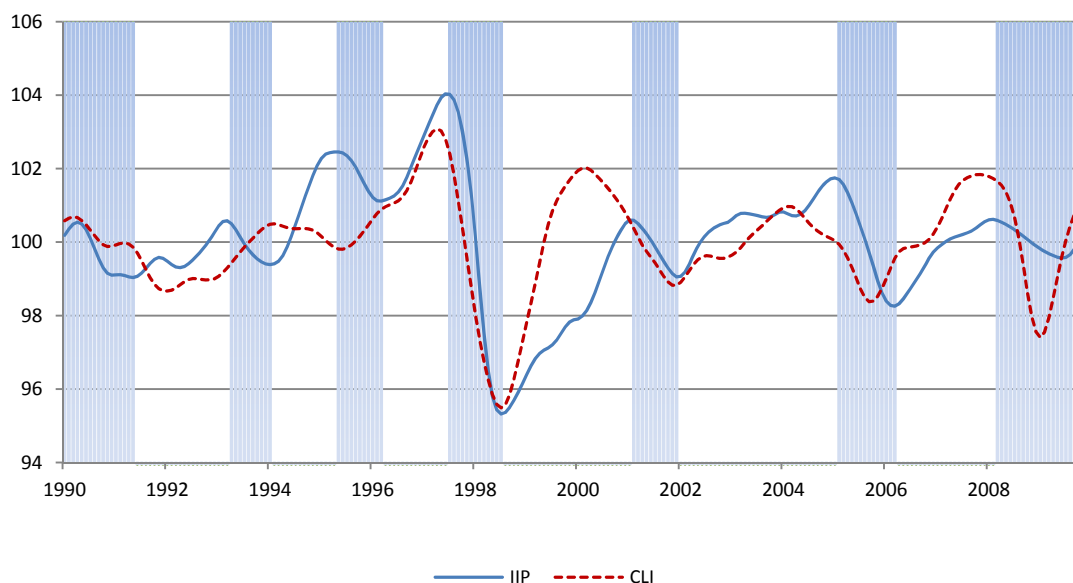
The Composite Leading Indicator

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	<i>Missed</i>
Trough	Jan-92		<i>Extra</i>
Trough		Jan-1994	<i>Missed</i>
Peak	Feb-94	May-1995	15
Trough	Jun-95	Mar-1996	9
Peak	Apr-97	Jun-1997	2
Trough	Jul-98	Jul-1998	0
Peak	Mar-00	Jan-2001	10
Trough	Dec-01	Dec-2001	0
Peak	Feb-04	Jan-2005	11
Trough	Sep-05	Mar-2006	6
Peak	Nov-07	Feb-2008	3
Trough	Jan-09		<i>Provisional</i>

The revised CLI for Indonesia performs better than its predecessor since it is calculated (i.e. 1990). While it has a mean lead of six months with a standard deviation of five months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.66) is considered to be appropriate as well. Although there are two missed and one extra turning points referring to the beginning of the series, all the following targeted turning points are predicted well in advance with a provisional trough for January, 2009.

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 Indonesia contains five monthly component series.

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

The two new components are *Japan: Small Business Survey: Sales tendency* and *SDR reserve assets* representing the external and the financial sectors respectively.

The series named *Japan: Small Business Survey: Sales tendency* has good leading properties, and it represents well the performance of the export sector of Indonesia, since Japan is one of the main destination for the country's export.

However, the cross correlation coefficient of *SDR reserve assets* is rather small, other characteristics of the indicator make it a suitable candidate to be part of the revised CLI, since it has relatively few missed or extra turning points and also its mean lead and the location of the peak of the cross correlation are appropriate.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (Revised)	1990	t-2	11	2	1	6	5	3	0.7
JSX Share prices	1990	t-1	11	3	2	5	8	3	0.3
Discount Rate (Inverted)	1990	t-3	12	2	1	5	6	2	0.7
IDR/USD exchange rate end period (Inverted)	1993	t-3	7	0	1	6	6	2	0.8
Japan: Small Business Survey: Sales tendency	1985	t-1	13	5	5	6	5	4	0.5
SDR Reserve assets	1971	t-4	13	3	4	6	6	6	0.2

The former CLI for Indonesia contained five component series out of which two have been dropped due to their unsatisfactory leading characteristics.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (Former)	1990	t-3	12	4	2	3	5	1	0.7
JSX Share prices	1990	t-1	11	3	2	5	8	3	0.3
Discount Rate (Inverted)	1990	t-3	12	2	1	5	6	2	0.7
IDR/USD exchange rate end period (Inverted)	1993	t-3	7	0	1	6	6	2	0.8
ITS Imports c.i.f. total sa	1990	t-4	12	6	3	1	4	0	0.6
ITS Exports f.o.b. total sa	1990	t-4	12	6	1	0	4	0	0.3

ITS Imports c.i.f. total and *ITS Exports f.o.b. total* have not been included in the revised CLI, as these indicators do not have leading properties anymore. The mean lead is less than two months in both cases. Furthermore, half of their targeted turning points are missed.

The revised CLI for Indonesia still has a component series, *Japan: Small Business Survey: Sales tendency*, representing the external sector of the economy.

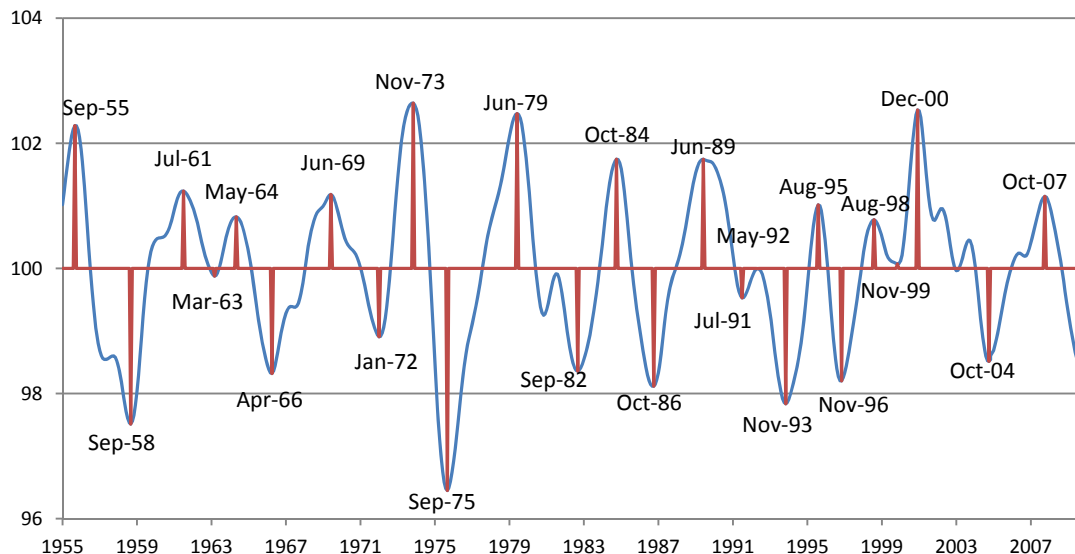
Republic of Ireland

The reference series

The reference series used for constructing OECD Composite Leading Indicator (CLI) for **Republic of Ireland** is the monthly index of industrial production (IIP) excluding construction. The IIP series starts in 1955, 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 by source¹ and has year 2005 as a base year.

Growth cycles in Industrial production

Growth cycles in Industrial production (IIP)
(percentage deviation from trend*, seasonally adjusted)



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

Over the period 1955 - 2009, industrial production registered thirteen growth cycles measured from peak to peak. The length of the cycles varies, as the duration of the shortest cycle was 28 months, while the longest cycle from 1955 to 1961 lasted for 70 months. The average duration of the cycles is 49 months with an average duration of the expansion phase of 25 months and an average duration of the contraction phase of 23 months.

The Composite Leading Indicator

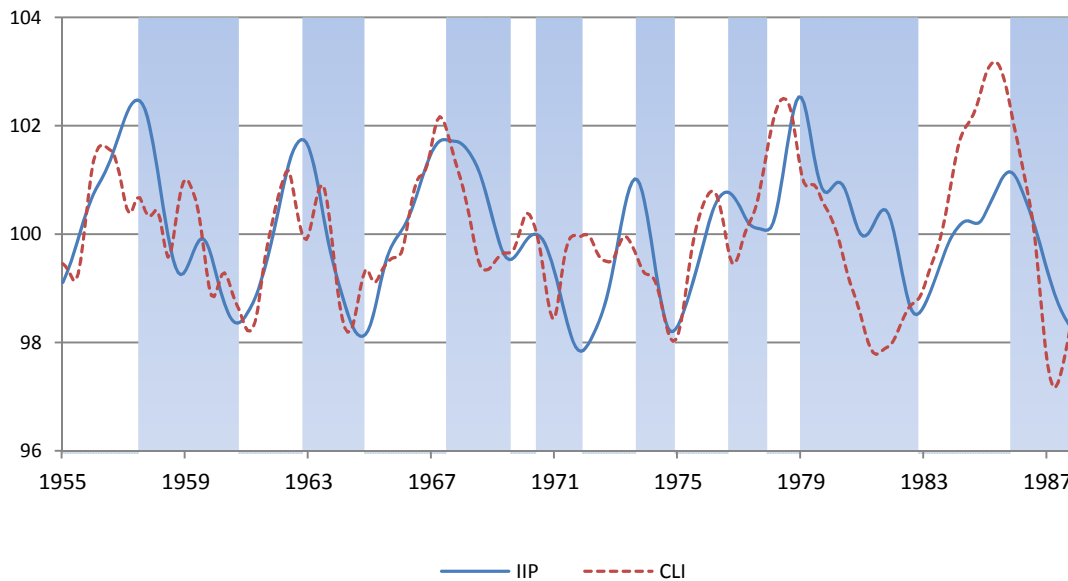
The table below presents the turning point dates of the CLI and the reference series:

¹ We had to make additional smoothing with respect to the IIP series for Republic of Ireland, as the series contained seasonality even after the adjustment made by the source. Thus, the Hodrick-Prescott filter applied for the IIP series of Republic of Ireland differs from the default setting used for constructing OECD CLIs, as the low-cut is set for 24 months instead of the usual 12 months.

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
Peak		Sep-1955	
Trough		Sep-1958	
Peak		Jul-1961	
Trough		Mar-1963	
Peak		May-1964	
Trough		Apr-1966	
Peak		Jun-1969	
Trough		Jan-1972	
Peak		Nov-1973	
Trough		Sep-1975	
Peak	Apr-1978	Jun-1979	14
Trough	Feb-1983	Sep-1982	-5
Peak	May-1985	Oct-1984	5
Trough	Apr-1986	Oct-1986	6
Peak	Apr-1989	Jul-1989	2
Trough	Oct-1990	Jul-1991	9
Peak	Feb-1992	May-1992	3
Trough	Dec-1992	Nov-1993	11
Peak	Jan-1994	Aug-1995	<i>Extra Missed</i>
Trough	Nov-1996	Nov-1996	0
Peak	Feb-1998	Aug-1998	6
Trough	Nov-1998	Nov-1999	12
Peak	Jun-2000	Dec-2000	6
Trough	Jun-2003	Oct-2004	16
Peak	Apr-2007	Oct-2007	6
Trough	Apr-2009		<i>Provisional</i>

The CLI performs well in predicting the turning points of the reference series since it is calculated (i.e. 1955). While there is a mean lead of seven 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 considered to be appropriate as well.

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 new CLI for Republic of Ireland includes seven monthly indicators.

There is only one series, *ISEQ share price index* that has been kept from the former CLI. The other component series contain two external indicators: *Value of Exports to Northern Ireland*, *Export: Agricultural Produce to Other EU*, two real indicators: *Total PPI mining and quarrying activities* and *Passenger car registrations*, and two financial indicators: *Real effective exchange rates - CPI Based* and *Money supply M2 to Euro area* besides the already mentioned *ISEQ share price index*.

All seven component series perform well, as the number of missed and extra turning points are relatively small and the leading characteristics measured by the mean lead, its standard deviation, the cross correlation coefficient and the location where the correlation coefficient takes its highest value are considered to be appropriate.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator <i>(New)</i>	1977	t-1	15	1	1	7	5	5	0.70
Value of Exports to Northern Ireland	1973	t-3	16	3	4	4	6	6	0.32
Export: Agricultural Produce to Other EU	1977	t-3	15	3	3	4	6	4	0.46
Passenger car registrations	1957	t-1	24	12	12	7	6	4	0.45
Total PPI mining and quarrying activities	1995	t-1	6	0	1	8	4	7	0.54
ISEQ share price index	1955	t-1	24	7	10	5	6	6	0.62
Real effective exchange rates - CPI Based <i>(Inverted)</i>	1970	t-1	17	6	7	6	7	8	0.34
Money supply M2 to Euro area	1999	t-2	3	0	0	4	1	2	0.72

The former CLI for Republic of Ireland has not been calculated since 2008, as half of the component series are not available anymore.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator <i>(Former)</i>	1974 - 2008		18	7	5	8	6	5	0.66
BTS: Finished goods stocks: level									STOPPED IN 2008
BTS: Order books: level									STOPPED IN 2008
BTS: Employment: tendency									STOPPED IN 2008
BTS: Consumer confidence indicator (EC)									STOPPED IN 2008
Retail sales: total volume	1968	t-3	18	8	6	8	7	2	0.59
ISEQ Share price index	1955	t-1	24	7	10	5	6	6	0.62
Spread of interest rates <i>(Inverted)</i>	1984	t-2	12	6	7	3	5	-24	0.24
Terms of trade <i>(Inverted)</i>	1955	t-6	24	13	20	7	7	-16	0.48

Only *ISEQ share price index* is included in the new CLI for Republic of Ireland, as the three remaining components, *Retail sales: total volume*, *Spread of interest rates* and *Terms of trade* that are still available do not have the desired leading properties anymore.

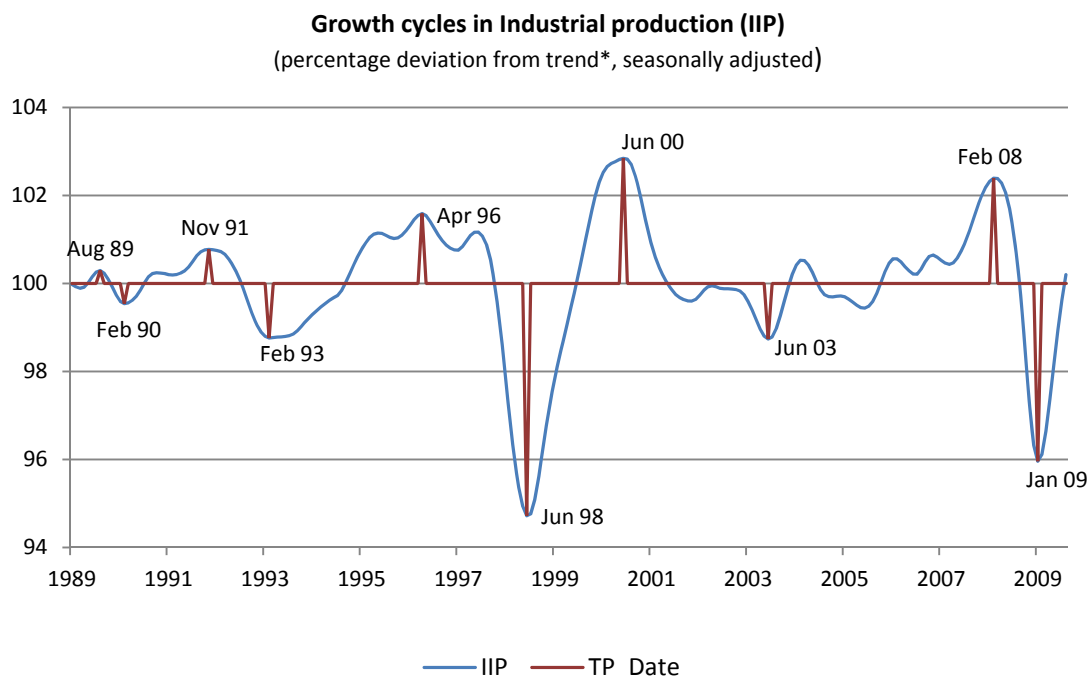
All three series have relatively large numbers of missed and extra turning points, and the difference between the mean lead and the location of the peak of the cross correlation is excessive as well. While the standard deviation of the mean lead is high in case of *Retail sales: total volume* and *Terms of trade*, the cross correlation value is too low for *Spread of interest rates*.

Korea

The reference series

The reference series used for constructing OECD composite leading indicators (CLI) for **Korea** is the monthly index of industrial production (IIP) excluding construction. The IIP series starts in 1989, 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 by source 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 1989 - 2009, industrial production registered four growth cycles measured from peak to peak. The length of the cycles differs, as the duration of the shortest cycle was 27 months, while the longest cycle lasted for 98 months. The average duration of the cycles is 56 months with an average duration of the expansion phase of 31 months and an average duration of the contraction phase of 23 months.

The Composite Leading Indicator

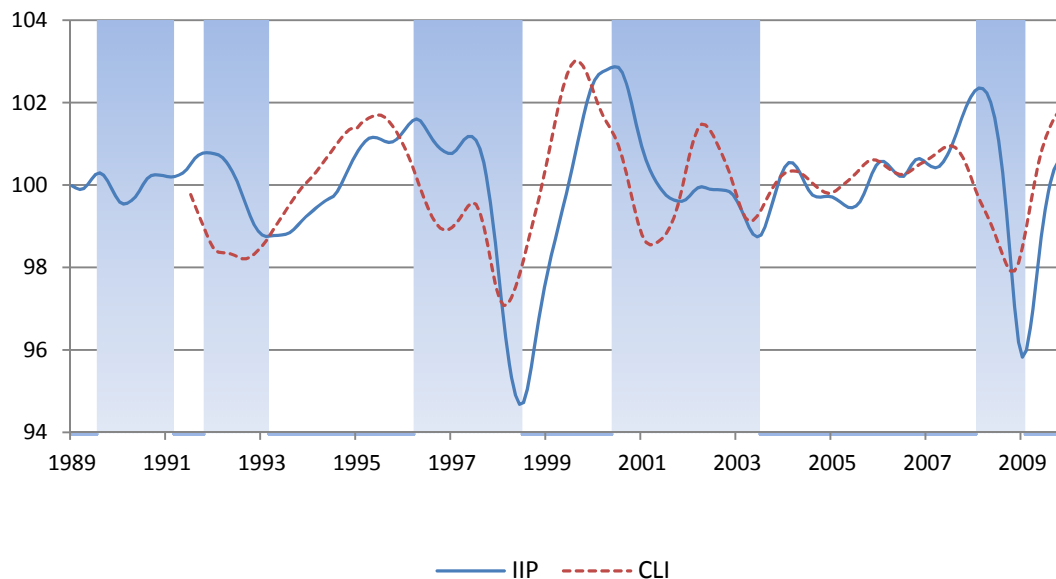
The table below presents the turning point dates of the CLI and the reference series:

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
peak		Aug-89	
trough		Feb-90	
peak		Nov-91	
trough	Aug-92	Feb-93	6
peak	Jun-95	Apr-96	10
trough	Feb-98	Jun-98	4
peak	Aug-99	Jun-00	10
trough	Mar-01		extra
peak	Apr-02		extra
trough	Apr-03	Jun-03	2
peak	Jul-07	Feb-08	7
trough	Oct-08	Jan-09	3

The CLI seems to be appropriate to predict the turning points of the reference series since it is calculated (i.e. 1991). While there is a mean lead of six months with a standard deviation of three months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.8) is also considered to be good.

The two extra turning points detected by the CLI for Korea should not be interpreted as a major deficiency, as they correspond to minor turning points in the reference series. Moreover, the CLI do not miss any turning points.

Growth cycles in 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

Six leading indicators are used to calculate the best performing CLI for Korea, of which two are financial indicators, one monitors business tendencies and three refer to external relations and real sectors. All the component indicators are monthly and show a lead greater or equal to 5 months at all turning points according to the mean measure (except the business surveys series). Furthermore, the component series show good fit at peak correlation against the reference series (except maybe the component Net Barter Terms of Trade and Inventory Circulation Indicator with a correlation at peak of 0.4).

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Revised</i>)	1991	t-2	7	0	2	6	3	5	0.8
Stocks of total investment manufactured goods (Volume) sa (<i>inverted</i>)	1990	t-2	9	1	2	11	5	11	0.7
Inventory circulation indicator (manufacturing)	1991	t-2	10	4	5	8	5	6	0.4
Manufacturing - Business situation: future	1991	t-2	7	0	2	2	4	1	0.8
Share prices KOSPI index	1981	t-1	10	2	0	5	5	2	0.7
Interest Rate Spread, Yields of Treasury Bonds(3-year) less Call Rates	1995	t-2	6	1	1	6	3	5	0.8
Net Barter Terms of Trade(2005=100) sa	1992	t-2	7	2	5	8	5	8	0.4

Only one business surveys series have been kept in the new design of the CLI. The other component indicators of the former CLI have been dropped.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Former</i>)	1990	t-1	9	3	4	8	4	6	0.7
Stocks of total manufactured goods (Volume) sa (<i>inverted</i>)	1990	t-2	9	2	4	10	5	11	0.7
Manufacturing - Finished goods stocks: tendency (<i>inverted</i>)	1991	t-2	7	0	2	4	6	3	0.6
Manufacturing - Business situation: future	1991	t-2	7	0	2	2	4	1	0.8
5-year housing (<i>inverted</i>)	1987	t-2	8	1	4	10	6	8	0.3
Money supply M2	1990	t-2	9	3	5	5	9	18	0.3
BOP Cap. and fin. balance excl. reserves	1980	stop sep-08	10	4	4	4	5	5	0.6

The financial component *5 years housing interest rate* included in the former CLI has been replaced by *the spread of interest (difference between of 3-years treasury bonds and overnight rate)* as its statistical properties are better (mean lead and peak lead are more consistent, the correlation more than double and the standard deviation has been reduced by almost half of the old one).

The *BOP component* has been dropped because of its high volatility and *M2 component* because of its relatively unstable lead. The new component which has been introduced is the *Net Barter terms of trade* series.

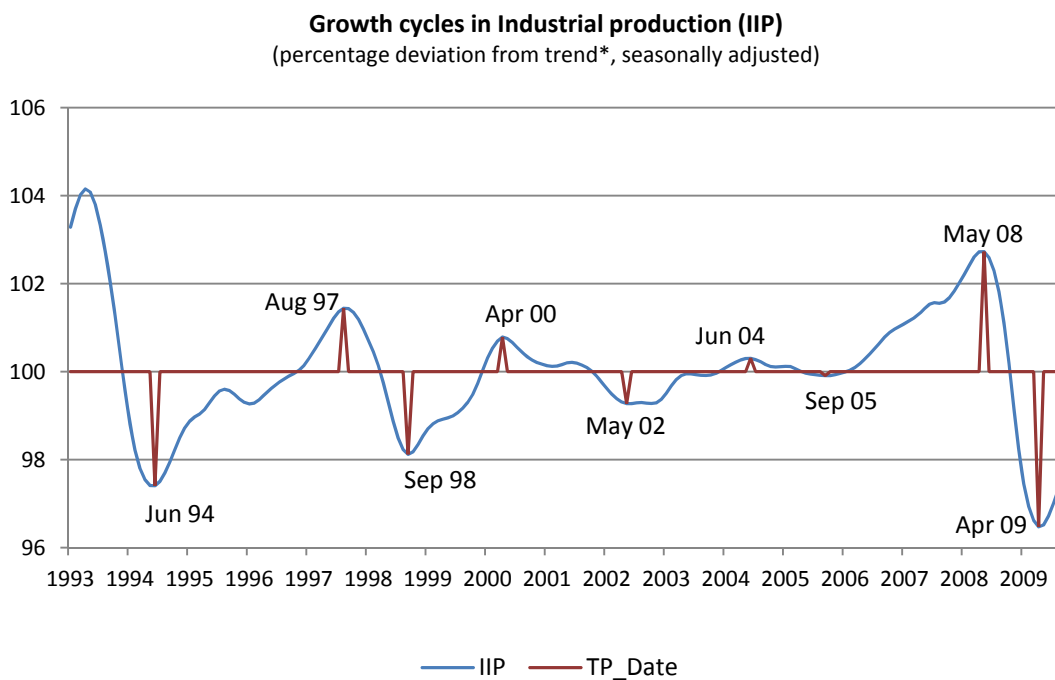
The *Stocks of total manufactured goods (Volume)* has been replaced by *Stocks of total investment manufactured goods (Volume)* as a result of less missed and extra turning points.

Russia

The reference series

The reference series used for constructing OECD composite leading indicators (CLI) for **Russia** is the monthly index of industrial production (IIP) excluding construction. The IIP series starts in 1993, 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 by OECD with an X12 Arima model 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](#).

Industrial production registered four growth cycles measured from trough to trough over the period 1993-2009. The length of the cycles is rather stable over the first two and the last cycle with a duration of 53, 54 and 47 months respectively. The third cycle is rather short as it lasted only for 27 months. The average duration of the cycles is 45 months with an average duration of the expansion phase of 24 months and an average duration in the contraction phase of 21 months.

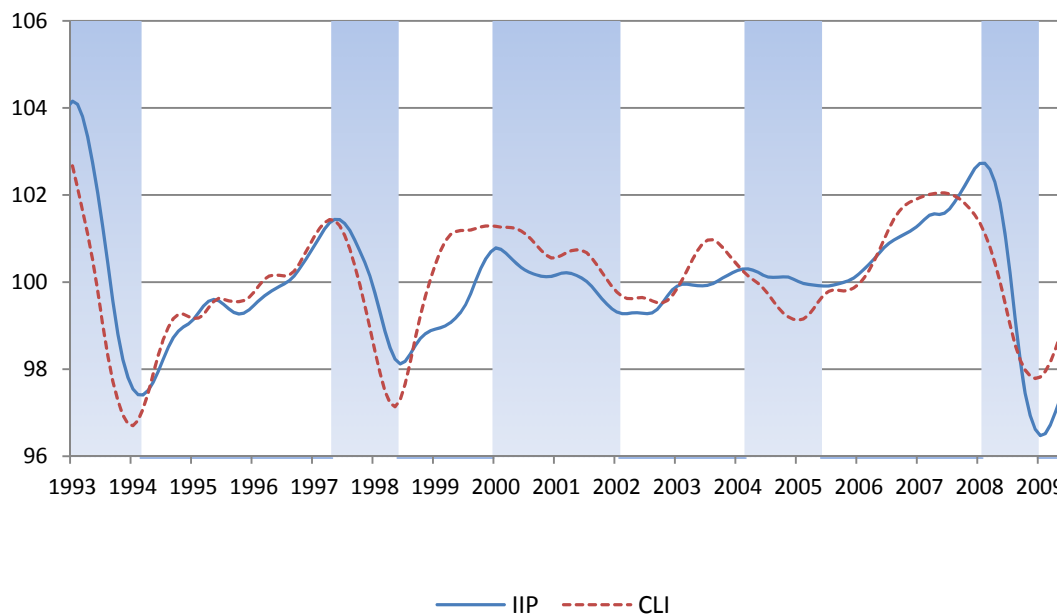
The Composite Leading Indicator

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	Apr-94	Jun-94	2
peak	Jul-97	Aug-97	1
trough	Aug-98	Sep-98	1
peak	Feb-00	Apr-00	2
trough	Apr-02	May-02	1
peak	Nov-03	Jun-04	7
trough	Jan-05	Sep-05	8
peak	Nov-07	May-08	6
trough	Feb-09	Apr-09	2

The CLI seems to be appropriate to predict the turning points of the reference series since it is calculated (i.e. 1993). While there is a mean lead of three months and a standard deviation of 2.7 months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.91) is also really good. Furthermore, the CLI neither miss any nor find any extra turning points.

Growth cycles in 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

Six leading indicators are used to calculate the best performing CLI for Russia, of which one is a financial indicator, three monitor business tendencies and two refer to external relations. All the component series have monthly frequency. Four series show a lead greater or equal to 4 months at all turning points according to the mean measure.

Moreover, the components show good fit at peak correlation against the reference series (except maybe for *US imports from Russia* with a correlation of 0.5 at peak).

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (Revised)	1993	t-2	9	0	0	3	3	3	0.9
US imports from Russia (inverted)	1992	t-2	8	4	3	13	4	12	0.5
Order books: level mfg. sa	1992	t-2	9	1	2	2	5	2	0.9
Share Prices: index (RTS)	1995	t-2	8	0	0	4	4	2	0.8
World market price crude oil	1980	t-2	9	2	2	2	4	2	0.6
Production trend observed in recent months sa	1993	t-2	9	0	0	5	5	3	0.7
Assessment of export order-books present level	1992	t-2	9	3	2	4	4	2	0.7

While three components (*Share prices*, *Order book level* and *Crude oil price*) of the former CLI have been kept, the other three indicators have been dropped due to their unsatisfactory statistical characteristics. All three excluded component series have been replaced.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (Former)	1994	t-2	8	2	2	1	2	2	0.9
Finished goods stocks: level (inverted)	1992	t-2	8	0	2	5	5	3	0.5
Order books: level mfg. sa	1992	t-2	9	1	2	2	5	2	0.9
World market price crude oil	1980	t-2	9	2	2	2	4	2	0.6
Monetary aggregate (M2) sa	1996	t-2	8	3	2	1	2	-1	0.9
Share Prices: index (RTS)	1995	t-2	8	0	0	4	4	2	0.8
ITS Net trade (f.o.b. - c.i.f.) sa	1994	t-2	8	4	3	3	3	1	0.6

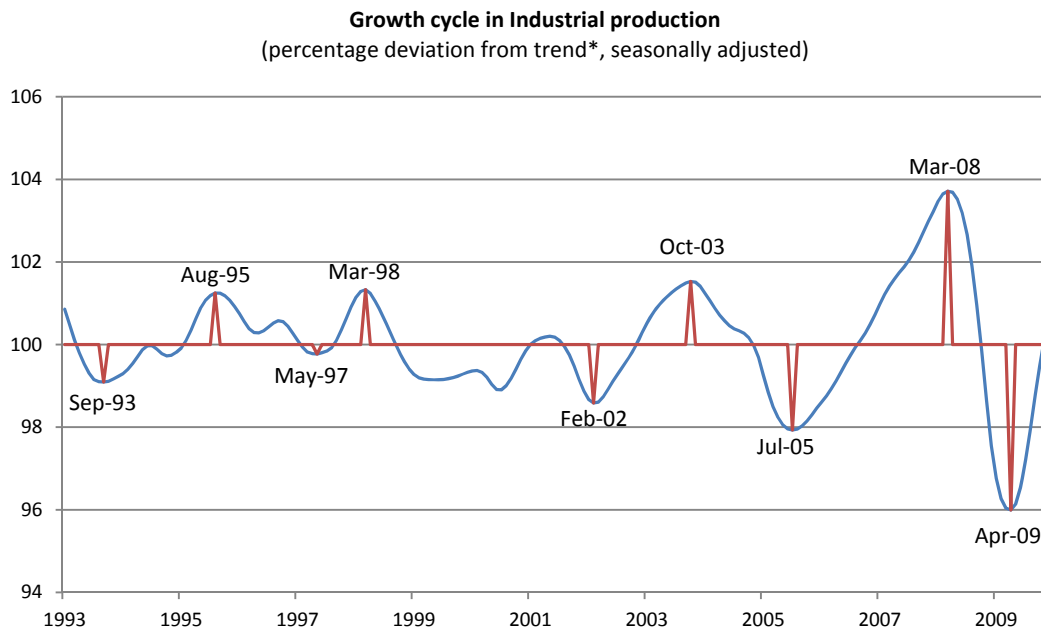
Finished goods stocks level, *Monetary aggregate: M2* and *Net trade* have been replaced by *Production trend observed in recent month*, *Assessment of exports order books present level* and *US imports from Russia*. The statistical properties of the new component indicators show are considerably better (mean lead and peak lead are more consistent, the correlation more than double and the standard deviation has been reduced by almost half of the old one).

Slovak Republic

The reference series

The reference series used for constructing OECD composite leading indicators (CLI) for **Slovak Republic** is the monthly index of industrial production (IIP) excluding construction. The IIP series starts in 1993, 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 1993 - 2009, industrial production registered three growth cycles measured from peak to peak. The length of the cycles varies, as the duration of the shortest cycle was 31 months, while the longest cycle from 1998 to 2003 lasted for 66 months. The average duration of the cycles is 50 months with an average duration of the expansion phase of 21 months and an average duration of the contraction phase of 29 months.

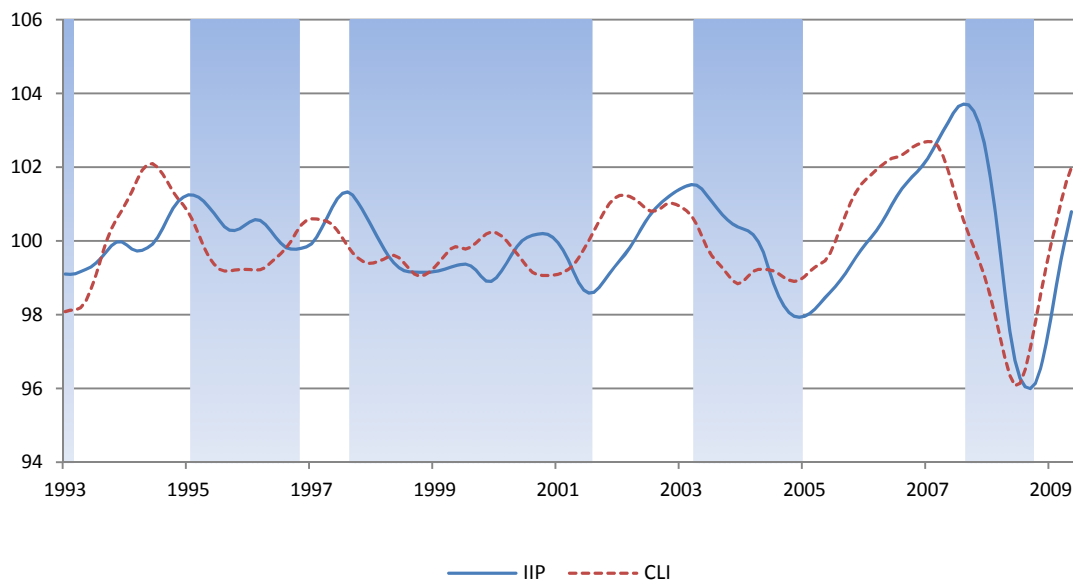
The Composite Leading Indicator

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		Sep-1993	
Peak	Jan-1995	Aug-1995	7
Trough	Apr-1996	May-1997	13
Peak	Aug-1997	Mar-1998	7
Trough	May-1999		Extra
Peak	Jul-2000		Extra
Trough	Jun-2001	Feb-2002	8
Peak	Sep-2002	Oct-2003	13
Trough	Jul-2004	Jul-2005	12
Peak	Aug-2007	Mar-2008	7
Trough	Jan-2009	Apr-2009	3

The CLI performs well in predicting the turning points of the reference series since it is calculated (i.e. 1993). While there is a mean lead of nine months with a standard deviation of four months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.82) is also considered to be good.

Growth cycles in 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 Slovak Republic contains one quarterly and four monthly component series.

There are two indicators, *Manufacturing – Production: future tendency* and *Net trade (f.o.b. – f.o.b.)* that have been kept from the previous CLI.

The three new component series are: *Production of manufactured crude steel, CPI (All items except food and energy)* and *BOP: Balance on services*.

All five component series perform rather well, as the number of missed and extra turning points is relatively small, except for *BOP: Balance on services*, and the indicators 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>	1993	t-2	8	0	2	9	4	5	0.82
Manufacturing - Production: future tendency	1993	t-1	8	0	2	7	6	4	0.75
ITS Net trade (f.o.b. - f.o.b.)	1991	t-3	9	3	3	7	5	7	0.25
Production of manufactured crude steel	1994	t-2	8	2	2	5	4	4	0.72
CPI All itmes (non-food, non-energy) <i>(Inverted)</i>	1995	t-1	7	1	0	9	6	8	0.33
BOP Balance on services	1993	t-4	8	5	2	7	5	8	0.61

Out of the five component indicators of the former CLI for Slovak Republic only two have been kept in the revised CLI. The other three component series have been dropped due to their unsatisfactory leading characteristics.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator <i>(Former)</i>	1993	t-2	8	3	3	6	3	3	0.59
Manufacturing - Production: future tendency	1993	t-1	8	0	2	7	6	4	0.75
Manufacturing - Selling prices: future tendency	1993	t-1	8	4	4	5	8	3	0.39
Total retail trade (Volume)	1995	t-2	7	4	4	-2	1	-4	0.47
Share prices: SAX index	1993	t-1	8	5	6	6	6	22	0.21
ITS Net trade (f.o.b. - f.o.b.)	1991	t-3	9	3	3	7	5	7	0.25

The real indicator, *Total retail trade (Volume)* has been excluded from the revised CLI for Slovak Republic, as its mean and peak lead show that the indicator does not have leading but more lagging properties.

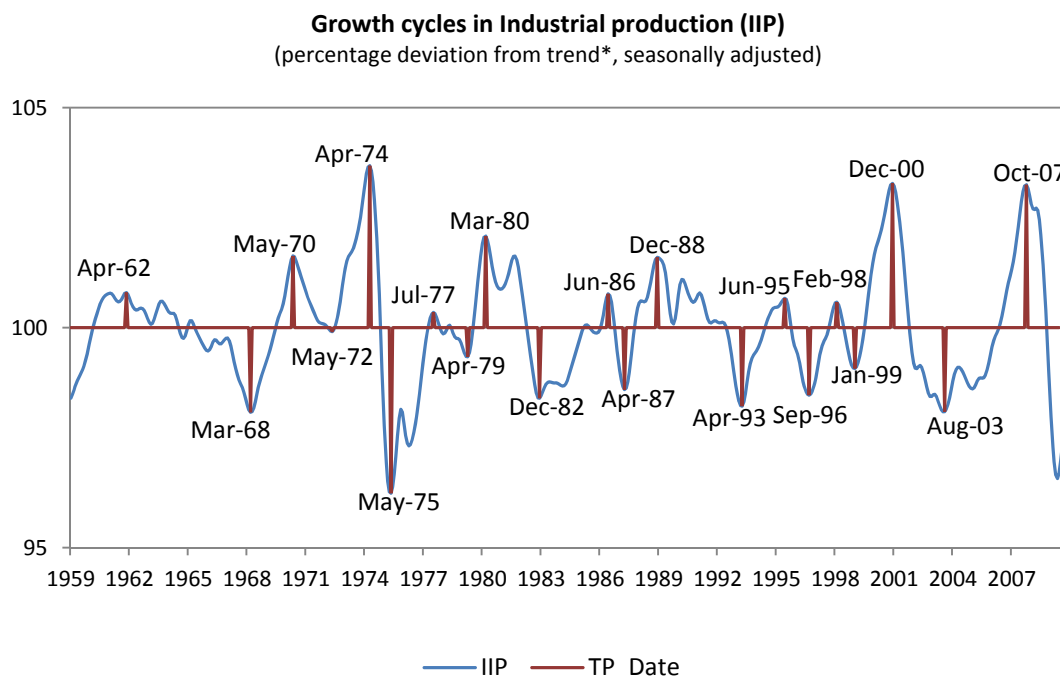
The financial indicator, *Share prices: SAX index*, and the tendency survey, *Manufacturing – Selling prices: future tendency*, have not been selected for the revised CLI for Slovak Republic as a result of poor statistical properties. The number of missed and extra turning points and also the standard deviation of the mean lead are high for both former components. Furthermore, the mean lead and peak lead of *Share prices: SAX index* differ excessively, while the value of the correlation coefficient for the same indicator is fairly small too.

Switzerland

The reference series

The reference series used for constructing OECD composite leading indicators (CLI) for **Switzerland** is the quarterly index of industrial production (IIP) excluding construction. The IIP series starts in 1959, it is timely (t-6, able to meet the MEI publication deadline) and accessible from the MEI database. Furthermore, the IIP series is seasonally adjusted by OECD with an X12 Arima model 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](#).

Industrial production registered ten growth cycles measured from peak to peak over the period 1959-2009. The length of cycle is rather stable for six cycles out of the ten recorded (around 40 months). For the other four cycles (the first one, the fifth, the seventh and the tenth) the duration is 103 months, 76 months, 79 months and 83 months respectively. The average duration of a cycle is 56 months with an average duration of the expansion phase of 27 months and an average duration in the contraction phase of 29 months.

The Composite Leading Indicator

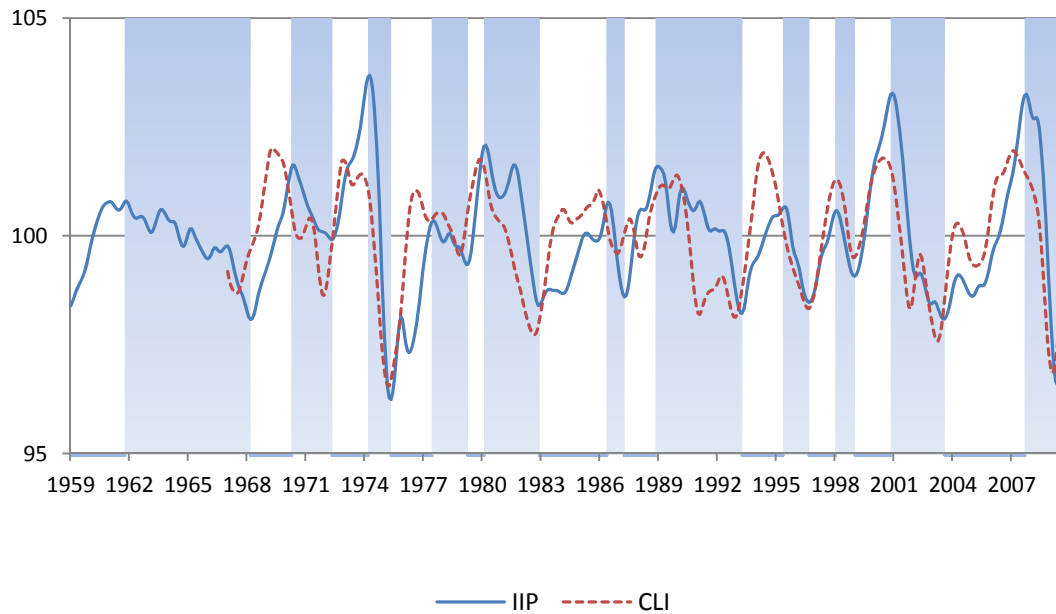
The table below presents the turning point dates of the CLI and the reference series:

	Turning point dates as predicted by CLI	Turning point dates in IIP	Lead (months)
peak		Apr-62	
trough		Mar-68	
peak	Apr-69	May-70	13
trough	Dec-71	May-72	5
peak	Dec-72	Apr-74	16
trough	Mar-75	May-75	2
peak	Aug-76	Jul-77	11
trough	Nov-78	Apr-79	5
peak	Dec-79	Mar-80	3
trough	Sep-82	Dec-82	3
peak	Dec-85	Jun-86	6
trough	Feb-88	Apr-87	missed extra
peak	Dec-89	Dec-88	missed extra
trough	Feb-91		extra
		Apr-93	missed
peak	May-94	Jun-95	13
trough	Sep-96	Sep-96	0
peak	Feb-98	Feb-98	0
trough	Dec-98	Jan-99	1
peak	Jun-00	Dec-00	6
trough	Apr-03	Aug-03	4
peak	Feb-07	Oct-07	8
trough	Feb-09		

The CLI seems to be appropriate to predict the turning points of the reference series since it is calculated (i.e. 1966). While there is a mean lead of six months and a standard deviation of 4.7 months, the general fit of the CLI with the reference series measured by the peak-correlation coefficient (0.71) is also good.

While the CLI misses three turning points, it also predicts three extra turning points (see graph below).

Growth cycles in CLI and Industrial production
(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

Six leading indicators used to calculate the best performing CLI for Switzerland: one financial and one real indicator and three business tendency surveys. Among the component series there are five with a monthly and one (*Consumer survey – Expected economic situation*) with a quarterly frequency. Four component indicators have a lead greater or equal to six months at all turning points according to the mean measure. Furthermore, all the series show a good fit at peak correlation against the reference series.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Revised</i>)	1966	t-2	19	3	4	6	5	5	0.7
Finished goods stocks: level	1967	t-1	20	4	5	4	3	2	0.6
Orders inflow: tendency sa	1966	t-1	20	4	7	8	6	5	0.6
Production: future tendency sa	1965	t-1	20	2	5	7	5	4	0.7
Consumer - Expected economic situation sa	1972	t-3	16	2	5	3	5	6	0.6
UBS-100 Share price index sa	1955	t-1	21	7	9	6	7	6	0.5
Silver prices CHF/kg	1985	t-3	10	1	4	6	6	5	0.7

While three components (*Share prices*, *Finished goods stocks level* and *Order inflow tendency*) of the former CLI have been kept, the remaining four component indicators have been dropped due to their unsatisfactory statistical characteristics. The excluded series have been replaced by three new components.

Indicator	Starting date	Timeliness	Turning points			Mean Lead (+)	St. Dev.	Cross correlation	
			Targeted	Missed	Extra			Lead (+)	Coef.
Composite Leading Indicator (<i>Former</i>)	1966	t-1	19	6	7	6	6	7	0.6
Finished goods stocks: level	1967	t-1	20	4	5	4	3	2	0.6
Orders inflow: tendency sa	1966	t-1	20	4	7	8	6	5	0.6
Production: tendency sa	1966	t-1	19	3	4	6	6	2	0.6
Unfilled job vacancies sa	1955	t-3	21	10	11	1	6	2	0.5
Deflated money supply (M1) sa	1955	t-3	21	11	10	11	7	18	0.5
UBS-100 Share price index sa	1955	t-1	21	7	9	6	7	6	0.5
Yield 10-year confederation bonds	1955	t-1	21	12	17	11	3	21	0.5

Production tendency, *Unfilled job vacancies*, *Deflated money supply (M1)* and *Yield 10 years confederation bonds* have been replaced by *Production future tendency*, *Consumer expected economic situation* and *Silver prices*. The statistical properties of the new component indicators are considerably better (mean lead and peak lead are more consistent and the standard deviation has been reduced by 1 month).