

AN UPDATE OF THE OECD COMPOSITE LEADING INDICATORS

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PART I – Overview of the update of the OECD CLIs

1-1 Introduction

The OECD has compiled Composite Leading Indicators (CLIs) since the beginning of the 1980s for 22 Member countries. OECD CLIs are now well disseminated and the Organisation has undertaken updating work to ensure that they continue to provide reliable signals for future turning points. To achieve this objective, it was decided to improve the estimation of the trend of the series used in the compilation of CLIs, by updating the lists of dates for peaks and troughs observed in the past cycles of these series, i.e. the chronologies of turning points. It was also decided to review the composition of the CLIs, in particular, to improve their overall timeliness. This document provides an outline of this updating work.

The previous update of the turning points and revision of component series was performed in 1996-1997 for the major seven countries (Canada, France, Germany, Italy, Japan, United Kingdom and the United States) as well as for Norway and Belgium. At the same time, a CLI was created for Mexico. The latest revision for the remaining countries (Australia, Austria, Denmark, Finland, Greece, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden and Switzerland) took place during the late 1980s, at least for the updating of the turning points.

The update outlined in this document ensures that the CLI calculation is based on more up-to-date chronologies of turning points. As a result, the trend estimation, which is a crucial element of the OECD methodology, will be strongly improved.

For OECD CLIs which had not been revised for more than 10 years, there were component series that had become untimely or irrelevant, in particular, because of changes in the economic structure of the country. In the meantime, a number of new indicators have been compiled by national institutes. These were assessed as potential component series. Some other series that were not incorporated as component series in previous studies because of lack of historical data, could now be used.

During the current evaluation, major importance was given to the timeliness of CLI and to the minimisation of the revision of CLI data from one month of publication to the next.

Due to time and resource constraints, priority was given to the replacement of untimely series and series that were no longer available from national sources, rather than to the investigation of new kinds of potential component series such as, for example, services series or business survey series in construction or retail trade. Due to the same constraints, the updating of the CLI for three countries (Greece, Mexico and Switzerland) was postponed. Furthermore, the CLI for Luxembourg will continue to be the simple average of the CLIs for Germany and Belgium.

The CLI for Italy and Spain were revised in 2001. As a result, 16 CLIs are involved in the update described in this document.

The CLIs for groups of countries, which are compiled as weighted average of CLIs for individual countries, are also affected by this update.

1-2 Intermediate objectives

1-2-1 To improve the trend estimation by updating the chronologies of turning points.

The long-term trend of the time series used in the compilation of OECD CLIs is computed by using the phase-average-trend (PAT) methodology. In this methodology, the calculation of the trend is very sensitive to the dates of the turning points and those turning points should, thus, be updated very regularly.

For the most recent period (i.e. the latest year), there is always some uncertainty on turning points: the amount of data available since the last upturn (or downturn) observed in the reference series may be too small to conclude that a turning point has occurred. Furthermore, the precise dating of the turning point by the routine over the very recent period may be subject to some variations, as new data become available. It was therefore decided not to take into account any turning points occurring in the reference series after June 2001.

1-2-2 To update the set of component series as follows

To replace as much as possible untimely component series with timely ones

The timeliness of component series within one CLI can be different from one series to another. As a consequence, the compilation of the CLI for the latest periods is often based on an incomplete set of component series. A link is made between the index calculated from an incomplete set of data and the earlier part of the series, which is based on the full set. For example, let us assume that we want to compile the value of the CLI for the month m , and that data for every component series is available for $m-1$, but only an incomplete set A of component series is available for m . The existing method is to compile the growth rate of the incomplete CLI (i.e. based on A) between $m-1$ and m , and, then, to apply this growth rate to the value at $m-1$ of the full CLI.

This entails revision in the series when untimely data become available. Thus, in this study, timeliness was considered as the most crucial practical criteria when selecting the component series.

To replace the component series which are stopped

For different reasons, practical or institutional, national statistical offices (NSOs) in OECD Member countries have stopped publishing some series. For example, since 1999, many financial indicators for Euro area Member countries have been compiled by the European Central Bank. Some of these are only available at the Euro area aggregated level and not at the individual country level. These series have been dropped from the CLIs, as they cannot provide any new information. For those series which represented a significant part of the country's economy, replacement series were sought.

For the 16 CLIs revised in 2002, 10 component series from previous CLIs were no longer updated. Eight of these were monetary or financial series: M1 for Austria, Finland, Ireland and Netherlands, reserve assets of the central bank and reserve assets of other banks for Finland, savings deposits for Netherlands and a basket of international long-term interest rates for

Norway. The remaining two series were the terms of trade for Netherlands and contracts and orders for plant and equipment for the United States.

To replace as much as possible quarterly component series with monthly ones

When selecting component series for a CLI, monthly series are preferred to quarterly series. However, in some cases it was decided to use quarterly series, if monthly series were not available for a particular field of the economy. This is, particularly, the case for countries that publish business tendency surveys on a quarterly basis (Canada, United Kingdom). The existing method to convert quarterly series into monthly series is to copy the quarterly value in one given month of the quarter and to estimate data for the two other months of the quarter using linear interpolation.

To check the relevance of other existing component series

For some countries, when the CLI was initially created, the selection of component series was made by using a short run of historical data in the reference series. Therefore, some component series were selected for their satisfying statistical properties compared with only 3 or 4 cycles in the reference chronology, which is a very small number. The period of availability of the reference chronology is now at least 40 years for 18 countries. Therefore, it was worth checking whether or not the existing component series were still relevant when calculating their statistical properties with this longer list of turning points.

For some countries, the number of potential component series, that was very small 20 years ago have since increased and for some subjects, new series have become available between the previous revision and now. Thus, in some cases, an existing component series relating to a given subject may no longer be the most representative indicator for this subject.

For these reasons, the relevance of every existing component series has been carefully checked.

1-3 Methodology

1-3-1 Description of the method used to select the reference chronology of turning points

The first step for the updating of a CLI was to determine a reference chronology of turning points for the economic activity of the country concerned. The methodology used to define this chronology consisted in compiling an initial list of turning points for one particular monthly series covering a broad part of the overall economy (in most cases, the index of industrial production), using the automatic Bry-Boschan routine. The share of the production of services in the overall economy is continuously increasing. Therefore, it was decided that the reference chronology of turning points should be based closely on the turning points for Gross Domestic Product (GDP). This would ensure that both the services and industry sectors are taken into account. Initial chronology and chronology for quarterly GDP were carefully compared. The turning points in the initial list were generally found to be very close to those for GDP. However, some turning points from the monthly series were shifted (or sometimes dropped) in order to ensure consistency between the final reference chronology and the GDP.

Once this initial reference chronology was agreed to within the Statistics Directorate of the OECD, it was referred to user analysts in other parts of the Organisation and to economists in

national institutes for comments and suggestions. The reference chronology was then updated by taking into account the feedback from internal and external users. The aim of this procedure was to make sure that both statistical and economic criteria were taken into account.

1-3-2 Description of the criteria used in the selection of the component series

As already mentioned, one of the main purposes of the update of the CLI composition was to minimise data revisions when new figures become available. Therefore, the following criteria were considered as very important when selecting the component series:

Practical criteria

The **timeliness of data**: CLI data for a given month m is published at the beginning of month $m+2$. Thus, the objective was to select component series that respected this timing. Ideally, it would even be preferable to have data available at the beginning of month $m+1$. Indeed, when component series show irregularity, a smoothing is performed using a 2 to 5-month moving average, according to the degree of their irregularity. Therefore, due to estimation problems at the end of a series, the latest value for a series, which shows irregularity, has to be re-estimated when the next value becomes available, implying a revision of the data.

The **absence of excessive revisions** of the component series is also regarded as an important factor for the stability of the CLI. As mentioned in paragraph 1.2.2 above, the **frequency** of the component series is also considered as a crucial criterion and monthly series are preferred to quarterly series.

Statistical criteria

In addition to practical considerations, the following statistical criteria were used to select the component series.

To evaluate the length of the lead, **the median lead at turning points** is preferred to the mean, since the number of turning points is rather small and the mean lead would be strongly affected by extreme values. The median lead at Peaks and the median lead at Troughs were also carefully evaluated to ensure that the component is leading the reference series at both kinds of turning points.

To evaluate the consistency of the lead, **the standard deviation from median of the lead** was observed. This value indicates how different the lead can be from one turning point to the other. Therefore, among different potential component series, which have been selected for the length of their lead, the series with the lowest standard deviation from median were chosen. The reliability of the leading indicator is definitely better if the lead is consistent over the different periods.

The **Months for Cyclical Dominance (MCD)** value gives an idea of the smoothness of the series. Series with small MCD should be preferred, in order to minimise the length of the moving average when performing the smoothing.

The **number of missing or extra cycles** was also taken into account. If there are too many extra cycles, the risk that the series gives false signals becomes important. Conversely, if the series failed in predicting several cycles in the past, this series may not always be very reactive to anticipate changes in the economic activity.

Recent behaviour of the potential component series was carefully examined. Changes in the economy over the past decades may have modified the interaction between macro-economic variables. Thus, it may happen that a very satisfying behaviour at recent turning points is hidden when studying the whole historical data of the series.

Economic criteria

The component series, which have been tested in this study, were chosen among those for which there was an **economic reason for their leading behaviour** vis-à-vis the reference series.

Finally, the **coverage of the set of component series** was checked in order to ensure that relevant sectors of the economy were covered. The composition of the CLI should also, if possible, be well balanced between business and consumer survey results, financial series and quantitative series from real economy.

1-4 Main results of the update

1-4-1 The reference chronology

As explained in the previous section, the reference chronology was determined using the chronologies from two series, i.e. the quarterly GDP as well as a monthly series. For most countries, the industrial production index was used as it provides a good proxy for the cycles of the overall economy. The lists of turning points from both series were found to be quite similar with each other for most countries. Thus, this result still supports the OECD practice for reference series, i.e. monthly series representing only the industrial sector as a good proxy for total economy in terms of cyclical analysis.

The final reference chronologies were determined after consultation with economists from the OECD and from national institutes. The main contribution of the economists was to distinguish major cycles from minor ones. Their feedback was also very helpful to determine the most recent turning points.

Considering all the countries for which CLIs were updated, the duration of the recessionary phases (about 25 months on average) is on average smaller than the duration of the recovery phases (about 32 months on average). This difference of length between downturns and upturns is smaller for European countries (6 months) than for non-European countries (12 months). Nevertheless, the average lengths of cycle are about the same for both regions, i.e. 57 months. It is also interesting to note that the average length of cycle was significantly higher after 1980 (63 months) than before (51 months). However, it should be noted that statistics on the length of phases are very sensitive to the definition of minor cycles and should therefore be used with caution.

Table 1: Average duration of phases

Period considered	Duration (number of months)		
	Recession phase	Recovery phase	Cycle
1955-2001	25	32	57
1955-1980	22	30	52
1981-2001	27	36	63

1-4-2 The component series

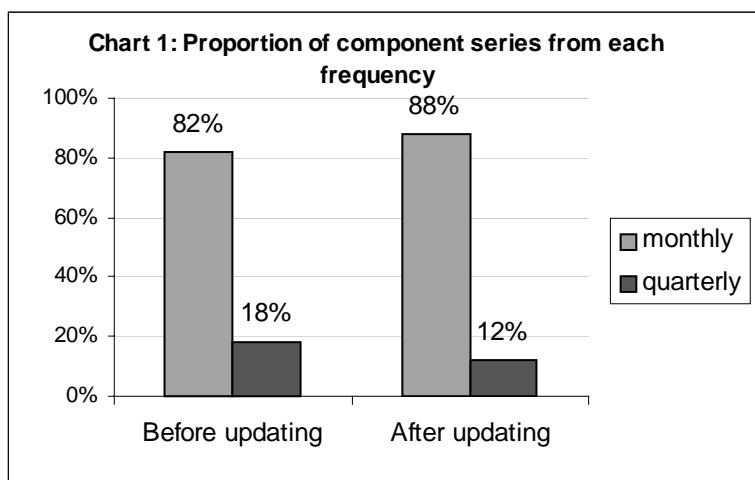
Before the update, the 22 OECD CLIs consisted of 171 component series, but 12 of these component series had ceased to be updated [see paragraph 1.2.2. above]

For each of the 18 updated CLIs (i.e. the 16 CLIs described in this document and the CLI for Italy and Spain which were revised in 2001), the properties for around 15 potential component series were carefully examined. 41 series have been newly included in the CLIs (i.e. 2.3 per country). On the other hand, 61 series (3.4 per country) were dropped from the CLIs because they were no longer available, untimely or because their performance as leading index deteriorated. As a result, the total number of component series used in the CLIs for the 23 countries (18 updated countries, plus Turkey for which a CLI has recently been constructed, plus the 4 countries that have not been revised recently) is 159 (6.9 per country).

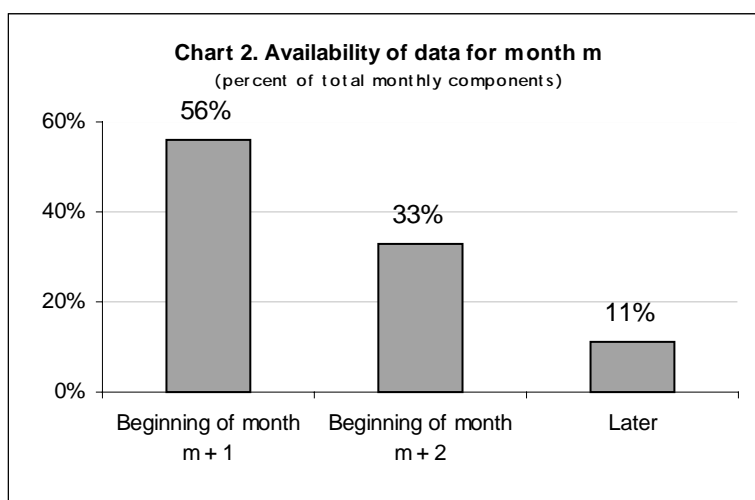
Table 2: Modifications in CLI composition

Type of component series		Series dropped	Series included	Balance
Financial series	Interest rates	9	4	
	Spread of interest rates		8	
	Share prices	1	3	
	Monetary aggregate	7		
	Other financial series	4		
	Total	21	15	-6
Business Tendency Survey	Business situation	4	1	
	Finished goods stocks	3	1	
	Raw material stocks	1		
	Order books	4		
	Export order books		1	
	Production: future tendency	1	1	
	Capacity utilisation	1		
	Total	14	4	-10
Consumer survey			7	7
Real quantitative indicator	Terms of trade	2		
	Export series	2	1	
	Prices series	2	2	
	Production	2	1	
	Labour market, wages	4	6	
	Stocks and investment	3		
	Construction	3	1	
	Retail sales	1	1	
	Car registrations	1		
	Nights in hotel		1	
	Total	20	13	-7
	Series from other country	OECD CLI	4	
Other		2	2	
Total		6	2	-4
	TOTAL	61	41	-20

88% of the component series of the new CLIs are monthly and 12% are quarterly, whereas before the update only 82% of the component series were monthly (see Chart 1.).

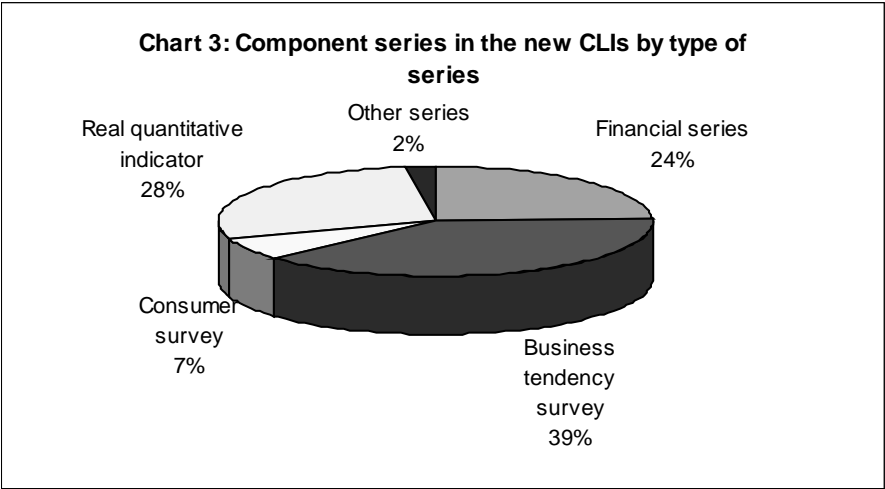


As shown in Chart 2, the update of the CLIs has significantly improved the proportion of monthly component series available at month $m+1$ and $m+2$, where m represents the reference month (from around 65% before the update to 89% after). This is particularly important as the publication month of CLIs is $m+2$.

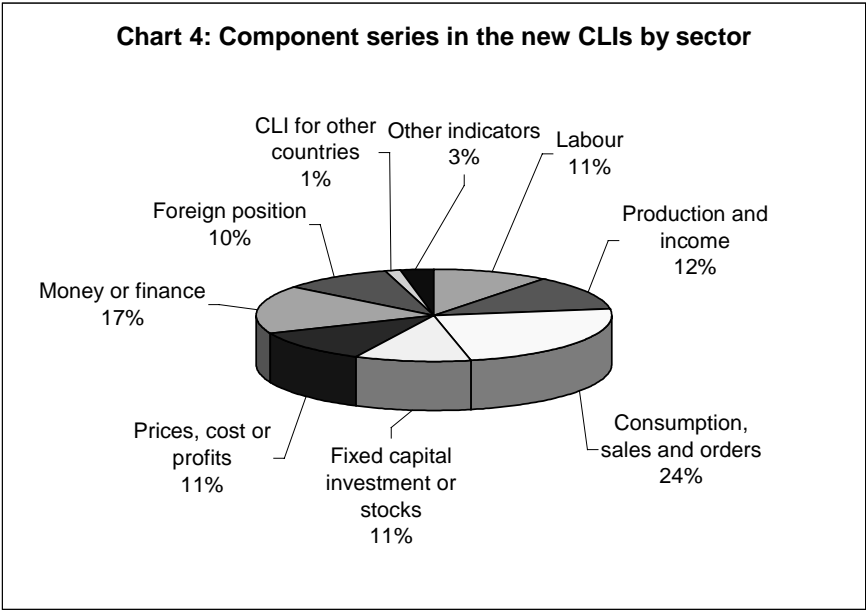


A secondary objective of the update of the CLI was to reduce the number of component series from another country. This number has been reduced from 11 to 6 (from 8 to 3 if we only consider the updated CLIs)

Finally, the list of component series in the new CLIs includes 46 % of survey results (business tendency surveys (39%) and consumer surveys (7%)). The repartition of the component series by type of series in the CLIs, after the update is shown on Chart 3.



And the new repartition of the component series by sector is as follows:



1-4-3 The CLIs

In addition to the change in the composition of the aggregated CLIs, another important improvement carried out by the update is their timeliness. We can now expect that for most of the time, CLI values for month *m* will be available at the beginning of the month *m+2* for every country. As a result, it was decided to move the percentage of component series needed to compile the CLIs from 40 % to 60 %.

1-5 Recommendations for future revisions

The significant changes in the trend estimation resulting from the update of the reference chronology emphasised the importance of the regular updating of turning points.

Regarding the composition of the CLIs, this update provided an opportunity to increase awareness of the variety of indicators developed by national institutes. As a result, the OECD will now be able to monitor, for each country, a list of potential component series which have not been included as component series into the CLI because of one particular criteria (e.g. absence of long historical data or absence of monthly figures) but which have been judged as having potential for possible future use. New kinds of potential component series such as services series or business survey series in construction or retail trade should also be investigated in the future.

At the same time, we can also expect the proportion of monthly component series to increase in the future as more and more business tendency surveys become available on a monthly basis.

Investigation of new techniques, in particular in the selection of component series could also be undertaken in the future and eventually lead to methodological revisions.

PART 2 - Country by country analysis of the CLI update

This Part contains, for each of the 16 CLIs updated in 2002, a description of the new CLI, as well as explanations for the different changes that have been made.

For each country, the updated CLI is described over 3 pages, which are organised as follows.

The 1st page describes:

- the date of the latest update of the CLI;
- particular drawbacks of the previous CLI which needed to be addressed;
- component series which have been dropped;
- component series which have been included;
- the determination of the reference chronology;

The set of component series of the new CLI is also provided.

On the 2nd page,

Table 1 (Reference chronology) contains three lists of turning points:

The first column contains a list of turning points from a monthly¹ series used as a proxy for the overall economic activity. These turning points are determined automatically using the Bry-Boschan routine.

The second column contains a list of turning points from the quarterly GDP. These turning points are determined automatically using the Bry-Boschan routine.

The third column contains the 'Final reference chronology', i.e. the reference chronology which is used in the compilation of the CLI. These turning points have been determined using the information from the two first columns as well as the expertise from economists.

Note that in this table, "T" stands for 'Trough' and "P" for 'Peak'. Minor cycles appear in brackets.

On the 3rd page, two charts are also provided:

Chart 1 compares, for the period until 2001, the monthly series used as proxy for the overall economy with the quarterly GDP. Both series are presented in their ratio to trend form. The chronology of turning points used to compute the trend is the chronology automatically determined by the Bry-Boschan routine. In this chart, both series are normalised in order to make comparable the amplitude of their cyclical movements.

Chart 2 shows the new CLI along with the reference turning points. The CLI is shown in its ratio to trend (amplitude adjusted) form. The vertical lines above 1 correspond to peaks in the reference chronology, while the vertical lines below 1 correspond to troughs in the reference chronology

¹ Quarterly for Australia

CANADA

The previous update of the CLI for Canada was completed in 1997, which is quite recent. However, several component series of the previous CLI were not very timely and therefore, new component series had to be tested.

In order to improve the overall timeliness of the component series, the series 'Wages and salaries (manufacturing) per unit of output' and 'Stocks finished goods (manufacturing)' have been dropped from the CLI since they were untimely. Nevertheless, the series 'Weekly hours of work (manufacturing)' which is not very timely has been kept in order to have a component related to the labour market.

The quarterly business survey series 'Orders inflow: tendency' has been dropped. As a consequence, the new CLI includes only two quarterly series: 'Finished goods stocks level (business survey)' and 'Production: future tendency (BS)'.

The 'BCD leading indicator for the United States' has also been removed from the CLI.

Three other series from the previous CLI have been kept: two financial series ('Deflated money supply (M1)' and 'TSE 300 composite share price index') and one construction series ('Number of housing starts, large cities'). These three series are timely.

Two new series have been included: the 'US Consumer sentiment' from the University of Michigan as an indicator related to the consumption as well as the long-leading series 'Spread of interest rate (Federal government bonds minus 90-day prime corporate paper)'.

The monthly indicator for total output from Statistics Canada has been used to determine the reference chronology. Some turning points detected by the automatic procedure have been shifted, taking into account suggestions from Statistics Canada, as well as from the OECD Economics department. In particular, the peak automatically detected in July 1992 has been advanced to March 1991. Economists also advised us to consider the cycle in 1997-98 as minor.

New set of component series

Component series from the previous CLI

FINISHED GOODS STOCKS: LEVEL (MANUFACTURING) (BS) (% balance)
TSE 300 COMPOSITE SHARE PRICE INDEX (1995 = 100)
DEFLATED MONEY SUPPLY (M1) (1995 Canadian Dollar)
PRODUCTION: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)
HOUSING STARTS, LARGE CITIES (Number)
WEEKLY HOURS OF WORK (MANUFACTURING) (Hours)

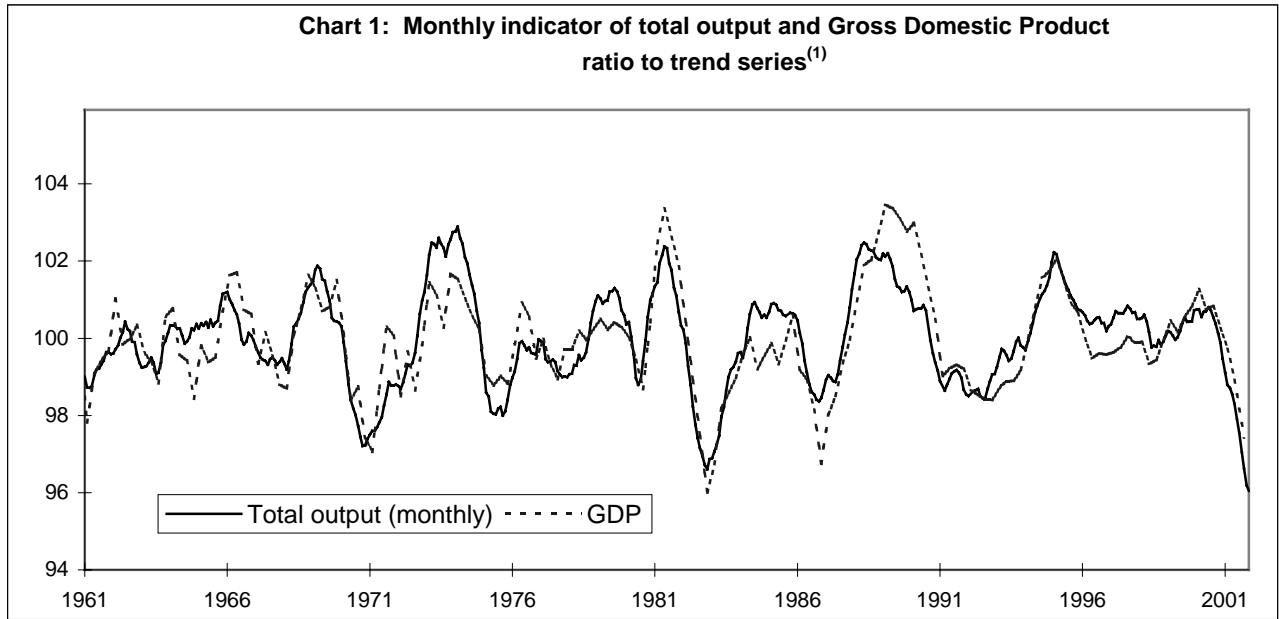
New component series

USA CONSUMER SENTIMENT (Normal=100)
SPREAD OF INTEREST RATES (% per annum) (Long-term rate minus 3-month rate)

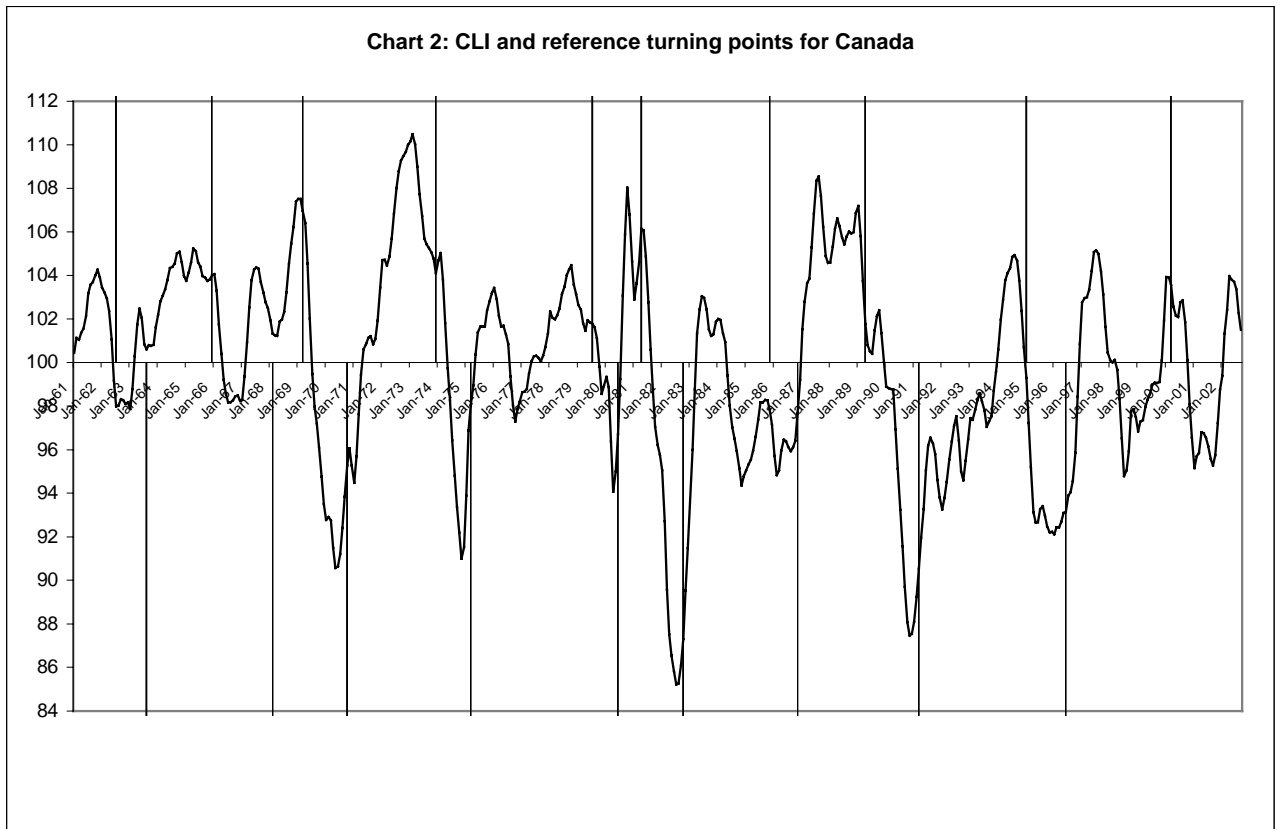
Table 1: Reference chronology

	Monthly indicator of total output	GDP	Final Reference Chronology
T		Q1-61	
P	Jun-62	Q1-62	Jul-62
T	Apr-63	Q3-63	Aug-63
P	Feb-64	Q1-64	Dec-65
T	Aug-64	Q4-64	
P	Mar-66	Q2-66	
T	Feb-68	Q1-68	Feb-68
P	Mar-69	Q4-68	Mar-69
T	Oct-70	Q1-71	Oct-70
P	Feb-74	Q4-73	Dec-73
T	Mar-75	Q2-75	Mar-75
P	May-76	Q2-76	[May-76]
T	Jul-78	Q3-77	[Sep-77]
P	Aug-79	Q1-79	Jul-79
T	Jun-80	Q3-80	Jun-80
P	Apr-81	Q2-81	Apr-81
T	Oct-82	Q4-82	Oct-82
P	Apr-84		
T	Sep-84		
P	Nov-85	Q4-85	Nov-85
T	Nov-86	Q4-86	Nov-86
P	Feb-90	Q1-89	Apr-89
T	Jul-92	Q4-92	Mar-91
P	Dec-94	Q1-95	Jan-95
T	Dec-96	Q2-96	Jun-96
P	Dec-97	Q3-97	[Dec-97]
T	Jul-98	Q2-98	[Jul-98]
P	Mar-00	Q1-00	Mar-00

[]: Minor cycle



(1) Trend is computed using turning points determined automatically.



UNITED STATES

The previous update of the CLI for the United States was completed in 1997, which is quite recent. Therefore, the performance of the previous CLI was considered to be satisfactory. However, the component series 'Contracts and orders for plant and equipment' was not very timely and needed to be dropped. Although the 7 other component series from the previous CLI were all timely and monthly, new potential component series have been tested.

Four component series from the previous CLI have been kept in the new CLI. The 'Consumer sentiment indicator (from the University of Michigan)', the 'Number of dwelling started' and the 'Share prices index (New York stock Exchange common stocks)' have been kept in particular for the length of their lead. The 'Net new orders for durable goods' has been kept because of its high correlation with the reference series.

The 'Spread of interest rates (difference between the 10-year treasury bonds and the Federal funds)' has been included in replacement to the '3 month Treasury bill rate' as a component related to the financial market. The 'Number of hours of work in manufacturing' has been included in replacement to the 'Number of weekly initial unemployment claims' as a component related to the labour market, since it is a little more timely.

A particularity of the previous CLI for the United States was the absence of business survey results as component series. Thus, different results from the surveys in manufacturing from the Institute for Supply Management were tested in this study and the Purchasing Manager Diffusion Index has finally been kept as it summarises the information from results in different sectors (new orders, production, employment, supplier deliveries and stocks).

Finally, the series 'Price of sensitive material' was dropped since the interpretation of its relationship with the reference chronology was not very straightforward.

Regarding the reference chronology, no major inconsistency has been noticed between the turning points detected in the industrial production index (IIP) and those detected in the GDP.

New set of component series

Component series from the previous CLI

DWELLINGS STARTED (Number)
NET NEW ORDERS FOR DURABLE GOODS (US Dollar - Million)
SHARE PRICE INDEX (COMMON STOCK NYSE) (1995 = 100)
CONSUMER SENTIMENT INDICATOR (Normal = 100)

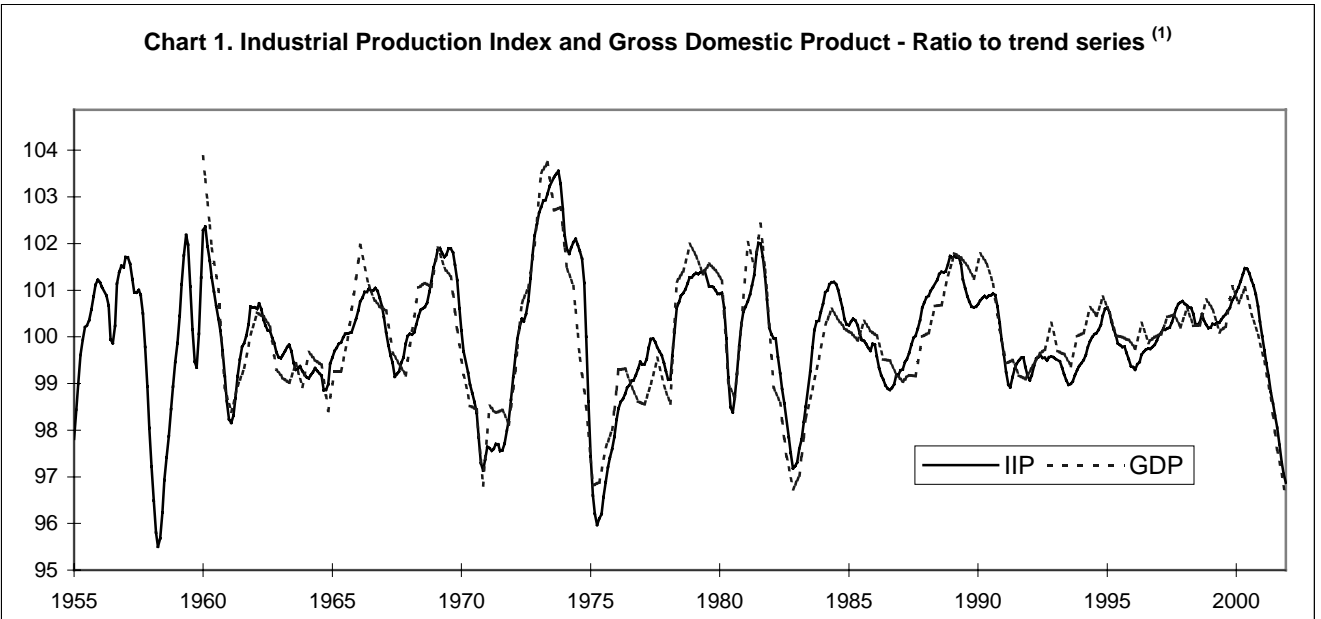
New component series

WEEKLY HOURS OF WORK : MANUFACTURING (Hours)
PURCHASING MANAGERS INDEX (BS) (% balance)
SPREAD OF INTEREST RATES (% per annum)

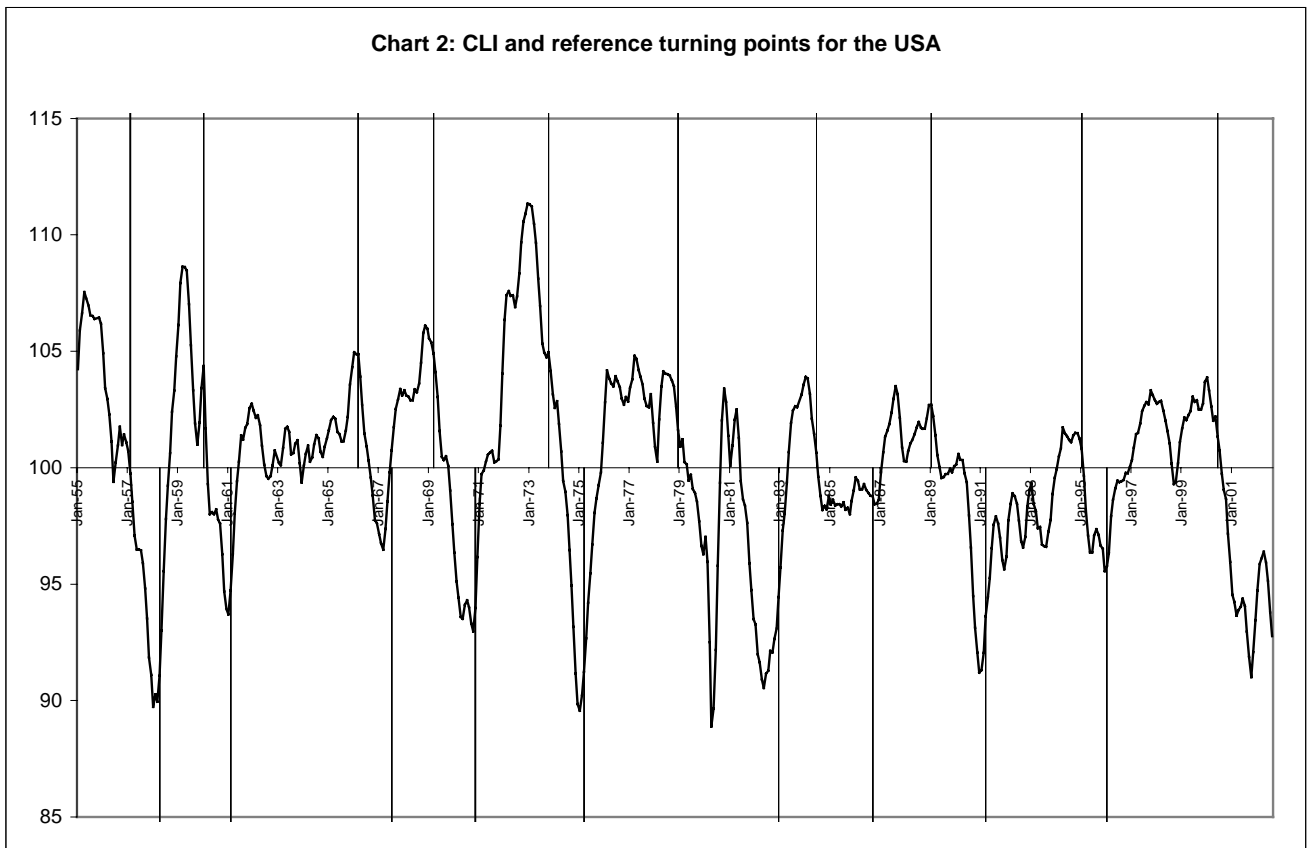
Table 1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T			
P	Feb-57		Feb-57
T	Apr-58		Apr-58
P	Jan-60		Jan-60
T	Feb-61	Q1-61	Feb-61
P	Dec-61	Q1-62	[Dec-61]
T	Oct-64	Q4-64	[Oct-64]
P	Oct-66	Q1-66	Mar-66
T	Jul-67	Q4-67	Jul-67
P	Mar-69	Q1-69	Mar-69
T	Nov-70	Q4-70	Nov-70
P	Oct-73	Q2-73	Oct-73
T	Mar-75	Q1-75	Mar-75
P		Q2-76	
T		Q1-77	
P	May-79	Q4-78	Dec-78
T	Jul-80	Q3-80	[Jul-80]
P	Jul-81	Q3-81	[Jul-81]
T	Dec-82	Q4-82	Dec-82
P	Jun-84	Q2-84	Jun-84
T	Sep-86	Q1-87	Sep-86
P	Jan-89	Q1-89	Jan-89
T	Mar-91	Q4-91	Mar-91
P	Jul-92	Q4-92	[Jul-92]
T	Aug-93	Q3-93	[Aug-93]
P	Jan-95	Q4-94	Jan-95
T	Jan-96	Q1-96	Jan-96
P	Nov-97	Q4-98	[Nov-97]
T	Dec-98	Q2-99	[Dec-98]
P	Jun-00	Q2-00	Jun-00

[]: Minor cycle



(1) Trend is computed using turning points determined automatically.



JAPAN

The previous update of the CLI for Japan was completed in 1997. However, several component series of the previous CLI were not very timely. Furthermore, this CLI for Japan included many quarterly series (3 components out of 9: 'Finished goods stocks: level (BS)', 'Business situation in manufacturing: prospects (BS)' and 'New loans for equipment'). Therefore, in this study, effort was concentrated on the inclusion of timely and monthly series.

The two business survey results ('Finished goods stocks: level (BS)' and 'Business situation in manufacturing: prospects (BS)') have been dropped because they were quarterly and because it was considered that business survey results were not necessarily representative of the Japanese economy.

The series 'Volume of stocks (mining and manufacturing)' has been dropped as well since it was not timely and because a component for stocks was already included in the CLI (i.e. 'Inventory to shipment ratio').

The series 'New loans for equipment' was dropped since it was quarterly and not timely. Furthermore, another series related to loans was already included in the CLI (i.e. 'ratio loans to deposits').

The series 'Monthly overtime hours (manufacturing)' has been included in replacement to the less timely series 'Job vacancies' as a component related to the labour market. This series was proposed by the OECD Economics Department.

Two other new component series have been included: 'Construction: dwelling started' and the 'Spread of interest rate (Difference between the 10-year interest rate and the 3-month interest rate)'. Both series are timely and long-leading.

The consistency between TPs from the index of industrial production (IIP) and from the GDP is good overall, although IIP seems to be slightly leading the GDP in several periods. One of the main differences is a cycle in 1967-68 in the IIP that was not detected in the GDP and that has been considered as minor due to its very small amplitude. The cycle in 1975 also shows very small amplitude for both series and has been considered as minor. The cycle in 1981 has been considered as minor following advice from the Economics Department.

New set of component series

Component series from the previous CLI

INVENTORIES TO SHIPMENTS RATIO (MINING AND MANUFACTURING) (1995 = 100)
RATIO IMPORTS TO EXPORTS (1995 = 100)
RATIO LOANS TO DEPOSITS (%)
SHARE PRICE INDEX (TOPIX) TOKYO (1995 = 100)

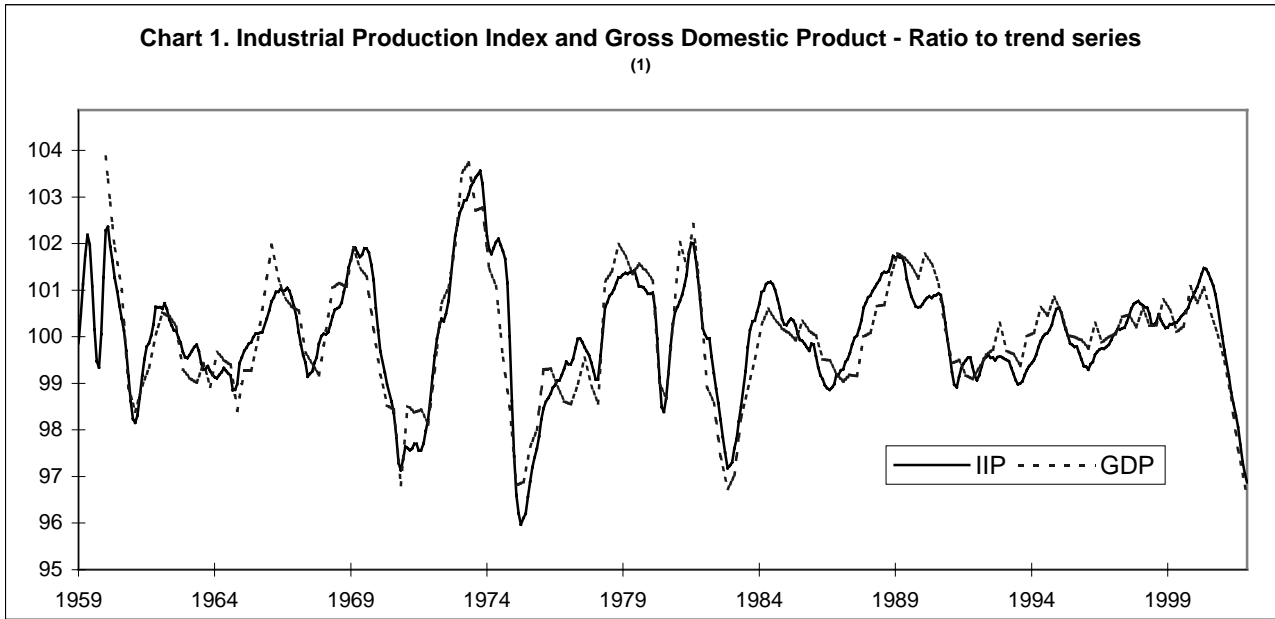
New component series

CONSTRUCTION: DWELLINGS STARTED (1995=100)
MONTHLY OVERTIME HOURS, MANUFACTURING (1995=100)
SPREAD OF INTEREST RATES (% per annum) (Long-term rate minus 3-month rate)

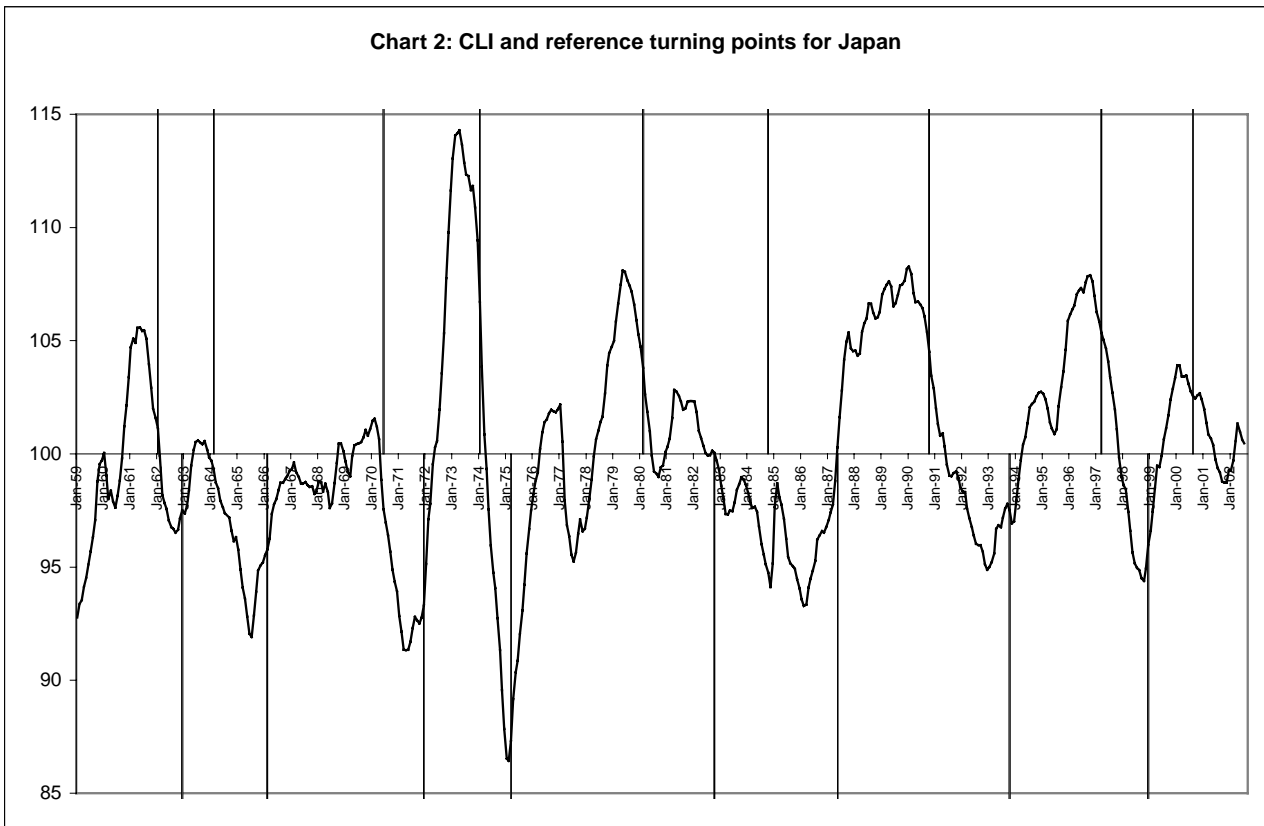
Table 1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T	Jun-55		
P	May-57		May-57
T	Jun-58		Jun-58
P	Jan-62	q4-61	Jan-62
T	Dec-62	q1-63	Dec-62
P	Feb-64	q2-64	Feb-64
T	Feb-66	q4-65	Feb-66
P	Nov-67		[Nov-67]
T	Sep-68		[Sep-68]
P	Jun-70	q1-70	Jun-70
T	Dec-71	q4-71	Dec-71
P	Jan-74	q1-73	Jan-74
T	Mar-75	q1-75	Mar-75
P	Jan-77	q4-75	[Jan-77]
T	Oct-77	q3-77	[Oct-77]
P	Feb-80	q2-79	Feb-80
T	May-81	q4-80	[May-81]
P	Oct-81	q2-82	[Oct-81]
T	Oct-82	q4-84	Oct-82
P	Oct-84	q4-85	Oct-84
T	May-87	q2-87	May-87
P	Oct-90	q3-90	Oct-90
T	Jan-94	q2-95	Oct-93
P	Mar-97	q1-97	Mar-97
T	Dec-98	q1-99	Dec-98
P	Aug-00	q1-01	Aug-00

[]: Minor cycle



(1) Trend is computed using turning points determined automatically.



FRANCE

The previous update of the CLI for France was completed in 1997, which is quite recent. Therefore, the performance of the previous CLI was still satisfactory. In particular, all component series were monthly, and were all available within a short delay, with the exception of 'Terms of trade'. However, the current update process was very useful: in addition to the update of the chronologies of turning points, it provided an opportunity to improve the balance between the different sectors represented in the set of component series.

The financial sector was over-represented in the previous CLI, since three interest rates were used: the 'Bond yield guaranteed by government'; 'EURIBOR 3-month interbank rate' (PIBOR before 1999); and the 'EONIA interest rate' (call money rate before 1999). The spread of interest rate which is calculated as the difference between the long-term and the 3-month interest rate shows a long lead and, thus, it was decided to include it in replacement to the first two interest rates mentioned above.

Since there were no component series related to the Labor market in the previous CLI, the OECD evaluated some, such as 'New unemployment claims' or 'New job vacancies' and finally decided to retain 'New job vacancies' despite its short historical data, for its rather good lead, in particular, at trough.

Turning points for the recent period were updated as follows: After the trough in August 1993, there was a peak in March 1995 and a trough in January 1997. The latest peak occurred in November 2000. The small cycle in 1998-1999 was considered as minor after consultation with economists. As can be seen on Chart 1, the amplitude of this cycle in the GDP is not very pronounced.

New set of component series

Component series from the previous CLI

NEW PASSENGER CAR REGISTRATIONS (Number)
CONSUMER CONFIDENCE INDICATOR (NATIONAL INDICATOR) (% balance)
EONIA INTEREST RATE (CALL MONEY RATE BEFORE 1999) (% per annum)
PRODUCTION: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)
PROSPECTS FOR INDUSTRIAL SECTOR (BS) (% balance)
FINISHED GOODS STOCKS: LEVEL (MANUFACTURING) (BS) (% balance)
SBF 250 SHARE PRICE INDEX (1995 = 100)
TERMS OF TRADE (1995 = 100)

New component series

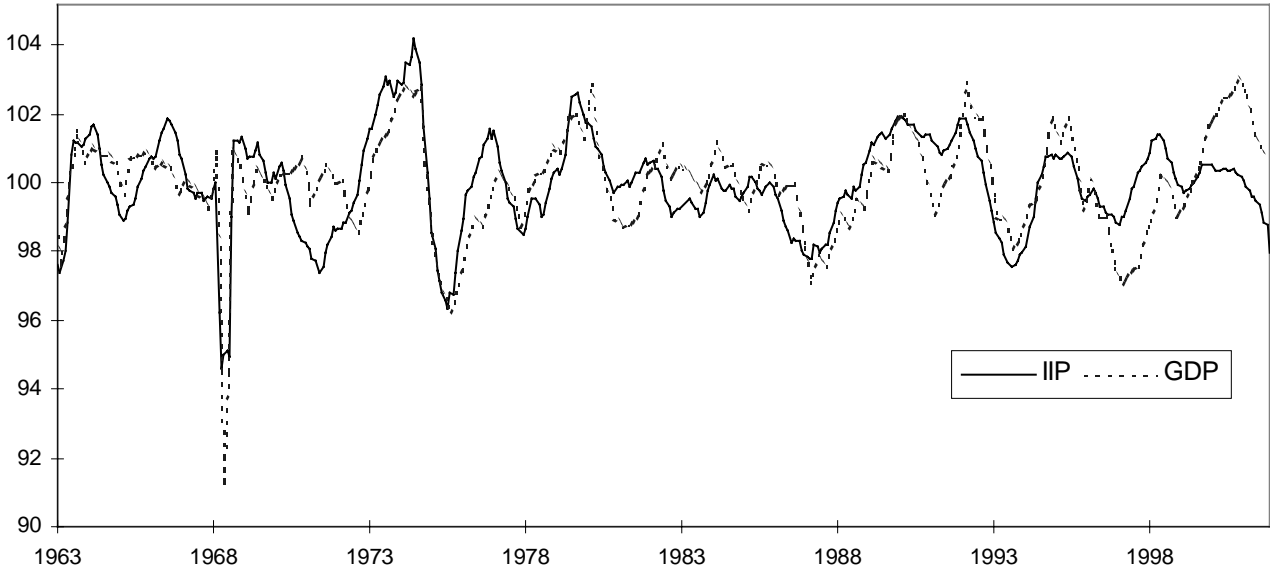
NEW JOB VACANCIES (Number)
SPREAD OF INTEREST RATES (% per annum) (Long term rate minus interbank rate)

Table 1: Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T	Mar-63	q1-63	Mar-63
P	Jan-64	q3- 63	Jan-64
T	Jan-65	q1-65	Jan-65
P	Jul-66	q4-65	Jul-66
T	May-68		Oct-67
P	Nov-68		May-69
T	May-71	q3-72	May-71
P	Aug-74	q1-74	Aug-74
T	May-75	q3-75	Jul-75
P	Sep-76	q1-77	[Sep-76]
T	Dec-77	q4-77	[Dec-77]
P	Aug-79	q1-80	Aug-79
T	Nov-80	q1-81	[Mar-81]
P	Dec-81	q2-82	[Dec-81]
T	Oct-83	q3-83	[Jul-82]
P		q1-84	
T		q1-85	
P	Mar-85	q3-85	[Mar-85]
T	Jan-87	q1-87	Jan-87
P	Jan-90	q1-90	Jan-90
T	Mar-91	q1-91	[Mar-91]
P	Dec-91	q1-92	[Dec-91]
T	Aug-93	q3-93	Aug-93
P	Mar-95	q2-95	Mar-95
T	Jan-97	q1-97	Jan-97
P	Mar-98		[May-98]
T	Apr-99		[Apr-99]
P	Nov-99	q4-00	Nov-00

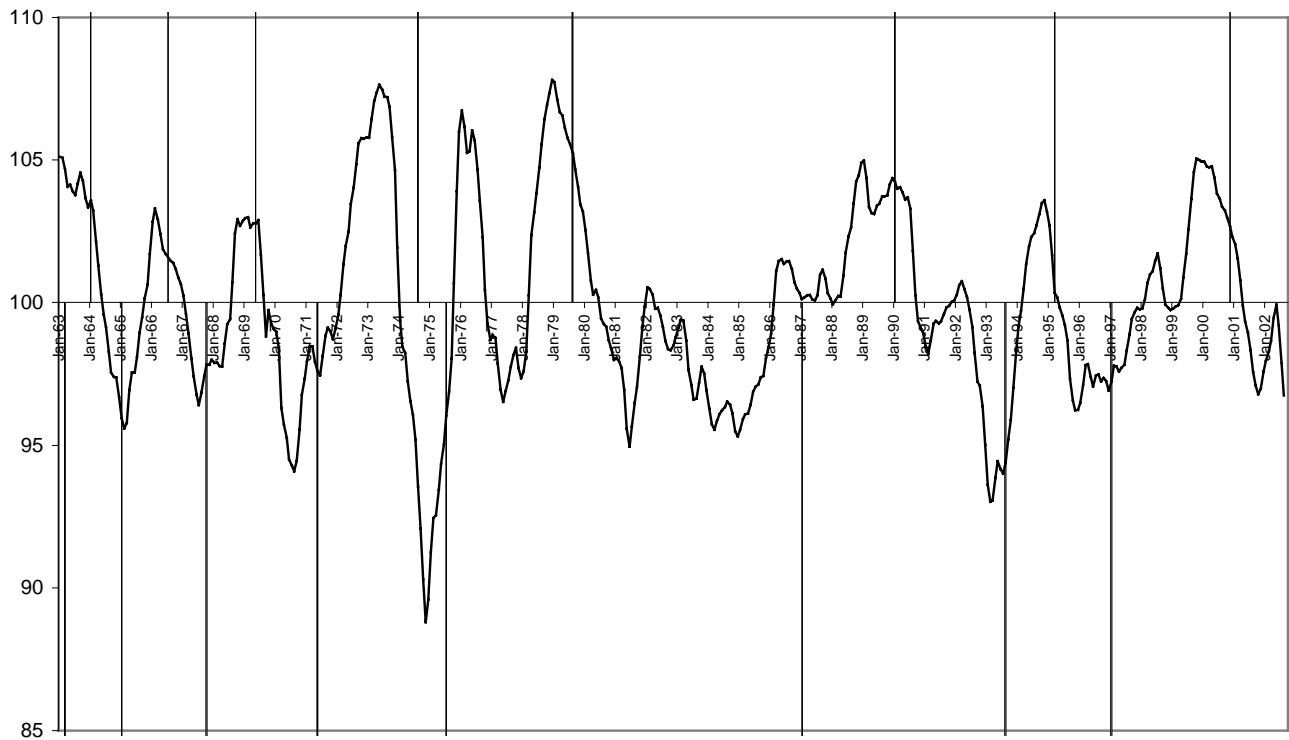
[]: Minor cycle

Chart 1 : Industrial Production Index and Gross Domestic Product - Ratio to trend series ⁽¹⁾



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for France



GERMANY

The previous update of the CLI for Germany was completed in 1996. All the components in the previous CLI are monthly. They are very timely, with the exception of 'Total new orders in manufacturing' which is available one month after the other component series. Therefore, no large changes were expected in the composition of the CLI for Germany.

A particular aspect of the previous CLI was the presence of four business survey results as component series out of the six component series in total. Most of the business survey results for Germany present a consistent but not very long lead.

Consecutively to this study, two component series were replaced: the business survey series 'Order books: level' was replaced by the business survey series 'Export order books: level'. This modification provided the opportunity to include a component series relating to foreign trade. Furthermore, this series has a longer lead than the series it replaced. The other series replaced is the 'Share prices'. After consultation with the OECD Economics Department, it was decided that this series was not the most relevant financial indicator. It has been replaced by the 'Spread of interest rates (difference between the Yield on 9-10 year Federal Securities and the FIBOR 3 month interest rate)' which shows a longer lead.

It should also be noted that the series 'Job vacancies' was evaluated as a potential component series, in order to include a series related to the labour market, but this series appeared to be rather lagging, and was not kept.

The consistency between the turning points from the index of industrial production (IIP) and from the GDP is good. The OECD Economics Department agreed that IIP approximates the GDP growth quite well.

New set of component series

Component series from the previous CLI

IFO BUSINESS CLIMATE INDICATOR (BS) (Normal=100)
ORDERS INFLOW/DEMAND: TENDENCY (MANUFACTURING) (BS) (% balance)
TOTAL NEW ORDERS (MANUFACTURING) (1995 = 100)
FINISHED GOODS STOCKS: LEVEL (MANUFACTURING) (BS) (% balance)

New component series

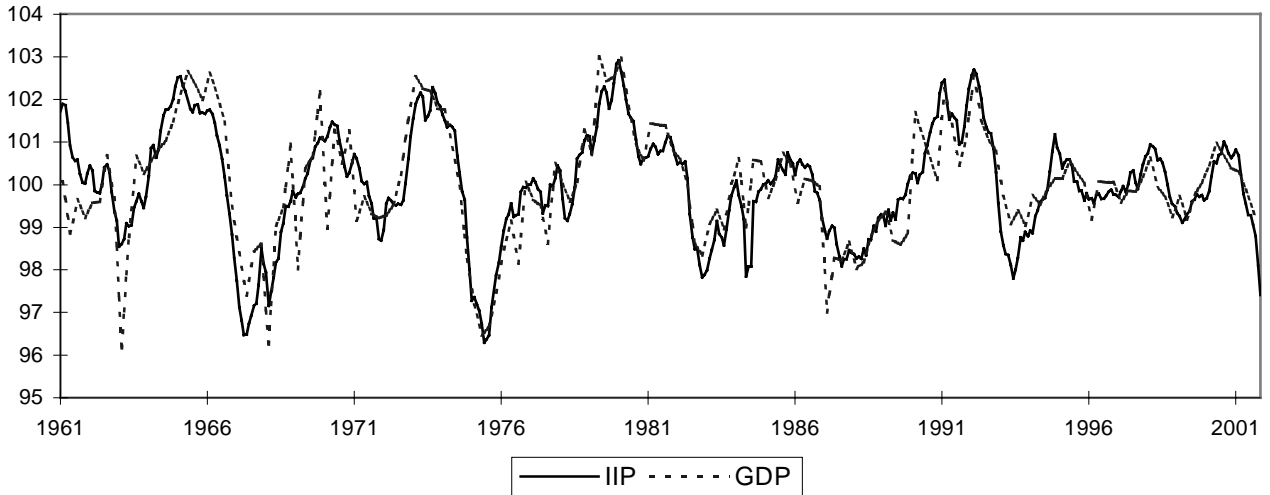
EXPORT ORDER BOOKS : LEVEL (MANUFACTURING) (BS) (% balance)
SPREAD OF INTEREST RATES (% per annum)

Table 1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T	Apr-59		Apr-59
P	Mar-61	q4-60	Mar-61
T		q2-61	
P		q3-62	
T	Feb-63	q1-63	Feb-63
P	Jan-65	q2-65	Jan-65
T	May-67	q1-68	May-67
P	May-70	q4-69	May-70
T	Dec-71	q4-71	Dec-71
P	Aug-73	q1-73	May-73
T	Jul-75	q2-75	Jul-75
P	Dec-79	q1-80	Dec-79
T	Sep-80		[Sep-80]
P	Oct-81		[Oct-81]
T	Nov-82	q4-82	Nov-82
P	Nov-85	q3-85	Nov-85
T	Sep-87	q1-87	Jan-87
P	Feb-92	q1-92	Feb-92
T	Jul-93	q4-93	Jul-93
P	Dec-94	q2-95	Dec-94
T	Feb-96	q1-96	Feb-96
P	Mar-98	q1-98	Mar-98
T	Feb-99	q2-99	Feb-99
P	Jul-00	q2-00	May-00

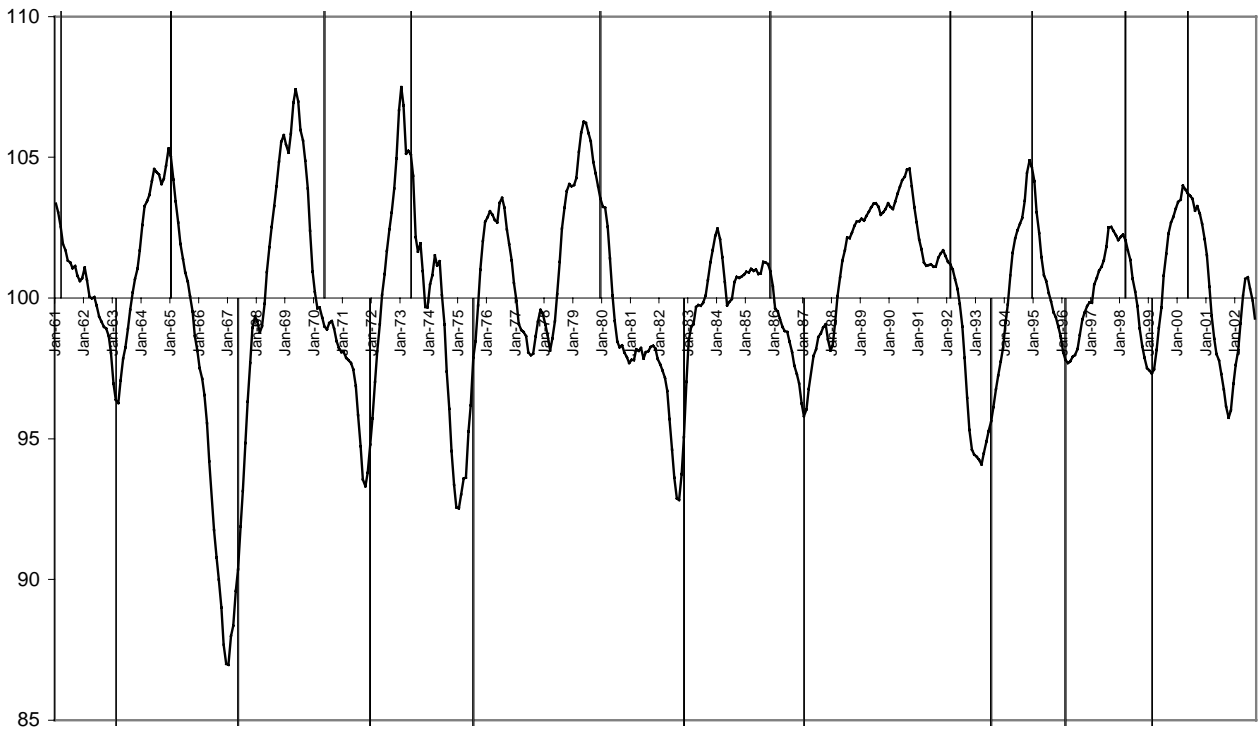
[]: Minor cycle

Chart 1. Industrial Production Index and Gross Domestic Product ⁽¹⁾



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Germany



UNITED KINGDOM

The last update of the CLI for the United Kingdom was completed in 1997, which is quite recent. The component series of the previous CLI were timely, thus no major changes in the composition were expected. Six component series (out of nine) of the previous CLI were business survey results. Therefore, one of the main objectives of the current study was to re-balance the components between qualitative and quantitative series.

Most business survey series from the Confederation of British Industry are quarterly, thus it would not have been an easy task to select only monthly series for this country and then quarterly survey series 'Prospects for exports' and 'raw material stocks: future tendency' have been kept in the new CLI. The monthly series 'Production: future tendency' was retained from the previous CLI.

At the same time, three series were dropped, namely, 'Business climate', 'Order books or demand: level' (two other series from the demand side are included in the new CLI) and 'Finished goods stocks: level' (this series is rather coincident).

Only one new series has been included: the 'Consumer sentiment indicator' from the European Commission.

Three other component series have been retained from the previous CLI since they continue to show good statistical characteristics. These series are 'New passenger car registrations', '3-months prime bank bills' and the 'FTSE-A non financial share price index'

The cycle detected in the industrial production index (IIP) in 1984-85 has no corresponding turning points in the GDP and has been considered as a minor cycle. Conversely, two very small cycles in GDP (1989-90 and 1996-98) have no corresponding turning points in the IIP and have not been kept as reference TPs.

New set of component series

Component series from the previous CLI

NEW PASSENGER CAR REGISTRATIONS (Number)

3-MONTH PRIME BANK BILLS (% per annum)

PRODUCTION: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)

STOCKS RAW MATERIALS: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)

FTSE-A NON FINANCIAL SHARE PRICE INDEX (1995 = 100)

PROSPECTS FOR EXPORTS - ONE YEAR (MANUFACTURING) (BS) (% balance)

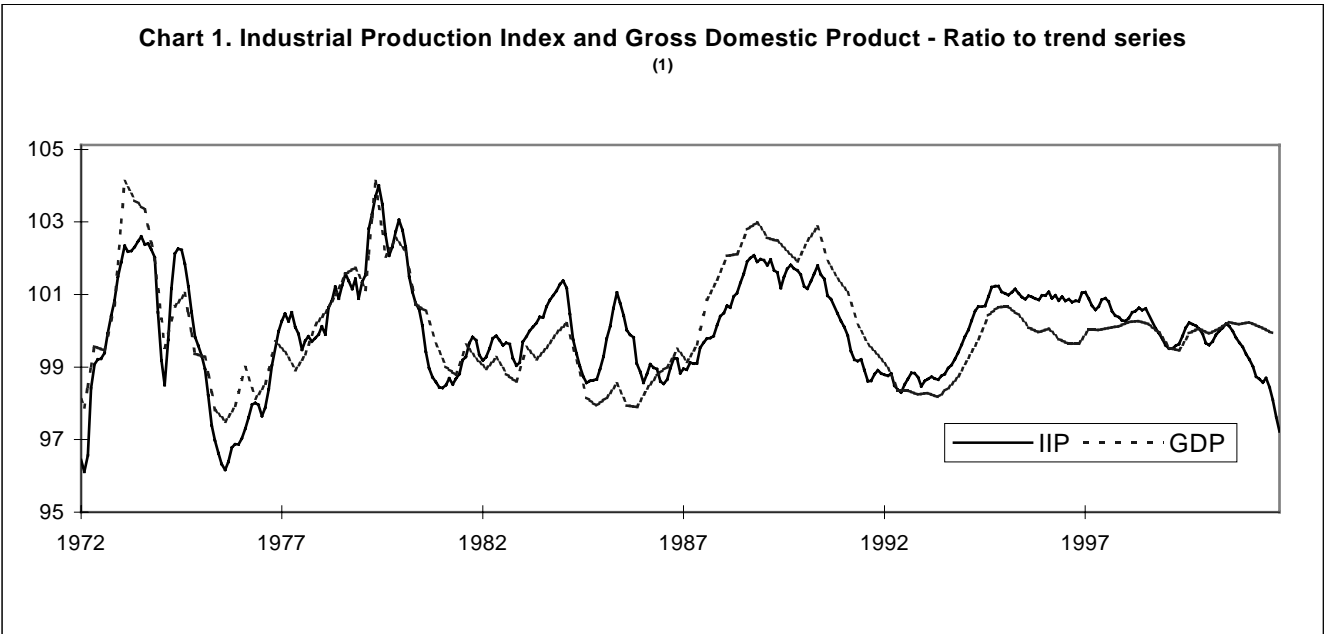
New component series

CONSUMER CONFIDENCE INDICATOR (EUROPEAN COMMISSION) (% balance)

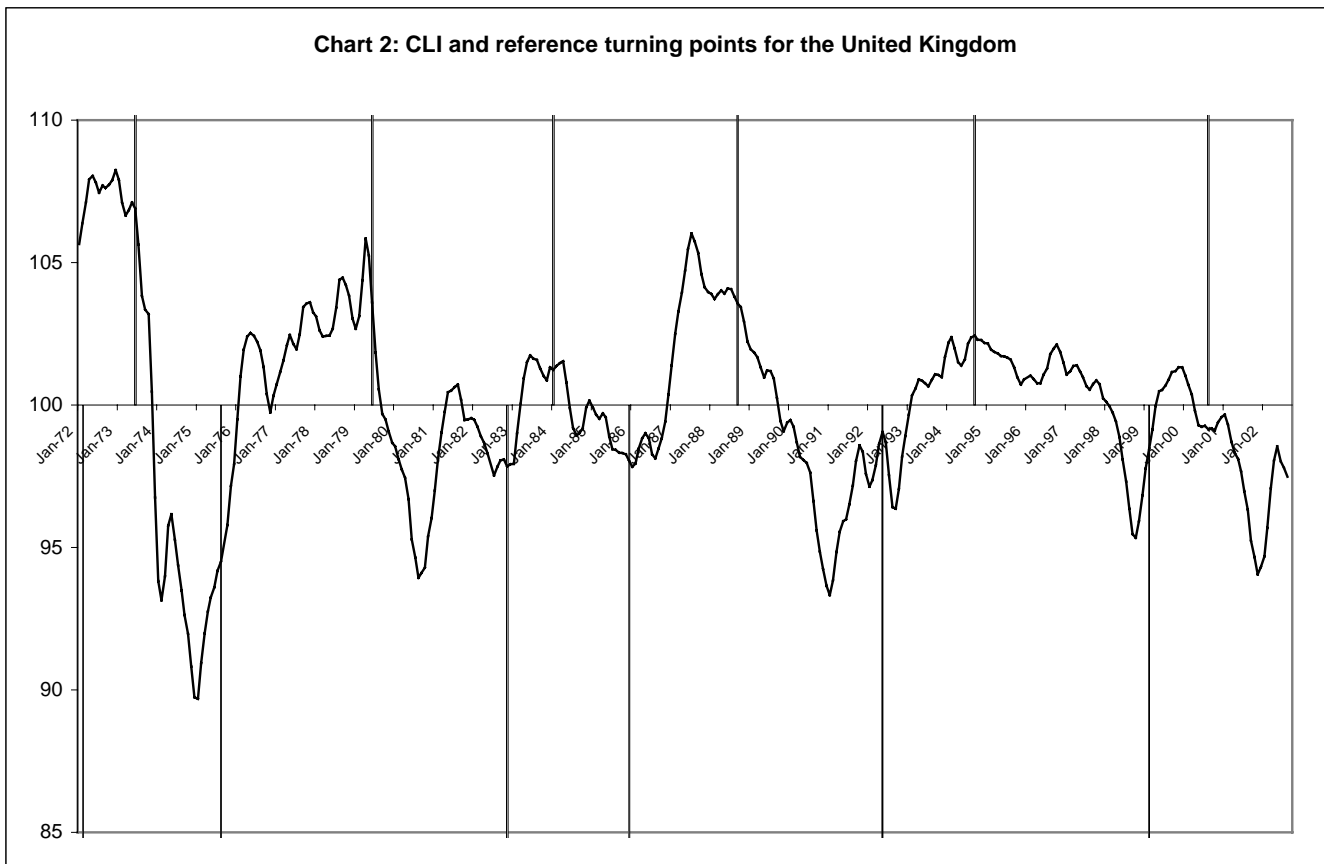
Table1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T	Aug-56		Aug-56
P	Jun-57		Jun-57
T	Oct-58		Oct-58
P	Mar-60		Mar-60
T	Jan-63	Q1-63	Jan-63
P	Jan-65	Q4-64	Jan-65
T	May-67	Q4-67	May-67
P	Jun-69	Q3-68	Aug-68
T	Feb-72	Q1-71	Feb-72
P	Jun-73	Q1-73	Jun-73
T	Aug-75	Q3-75	Aug-75
P	Jun-79	Q2-79	Jun-79
T	May-81		[May-81]
P	May-82		[May-82]
T	Nov-82	Q4-82	Nov-82
P	Jan-84	Q1-84	Jan-84
T	Aug-84		[Aug-84]
P	Jun-85		[Jan-85]
T	Aug-86	Q4-85	Dec-85
P	Sep-88	Q4-88	Sep-88
T		Q4-89	
P		Q2-90	
T	May-92	Q2-93	May-92
P	Sep-94	Q1-95	Sep-94
T		Q3-96	
P		Q2-98	
T	Feb-99	Q2-99	Feb-99
P	Aug-99	Q1-01	Aug-00

[]: Minor cycle



(1) Trend is computed using turning points determined automatically.



AUSTRALIA

The last update of the CLI for Australia was completed more than 10 years ago. Therefore, the chronologies of Turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken.

An important particularity of the potential reference and component series for Australia is that many of them are available only on a quarterly basis. This is the case, in particular, for the index of industrial production as well as for the business survey results from ACCI-Westpac.

The previous component series 'Money supply (M3)' was not very timely. Thus, the long-leading series 'yield on 10-year treasury bonds' is the preferred financial component series in addition to the series 'share prices, industrials'.

The other series dropped from the previous CLI was the 'Business situation: prospects (BS)'. This series did not provide much additional information since three other business survey results ('Employment: tendency', 'Orders inflow: tendency' and 'Production: tendency') are already included in the CLI and the business situation can be considered as a synthesis of the other business survey results.

The series 'terms of trade' was kept from the previous CLI, although it is not very timely. This is because it has a long lead.

In 1975-76 as well as in 1979-80, small cycles that were detected in the IIP were not kept by the automatic routine in the chronology of GDP because the phases were too short. It was decided to include these cycles in the reference chronology as minor cycles.

New set of component series

Component series from the previous CLI

DWELLING PERMITS ISSUED (Number)
ORDERS INFLOW (MANUFACTURING): TENDENCY (BS) (% balance)
PRODUCTION (MANUFACTURING): TENDENCY (BS) (% balance)
EMPLOYMENT (MANUFACTURING): TENDENCY (BS) (% balance)
SHARE PRICE INDEX (ALL INDUSTRIALS) (1995=100)
TERMS OF TRADE (1995=100)

New component series

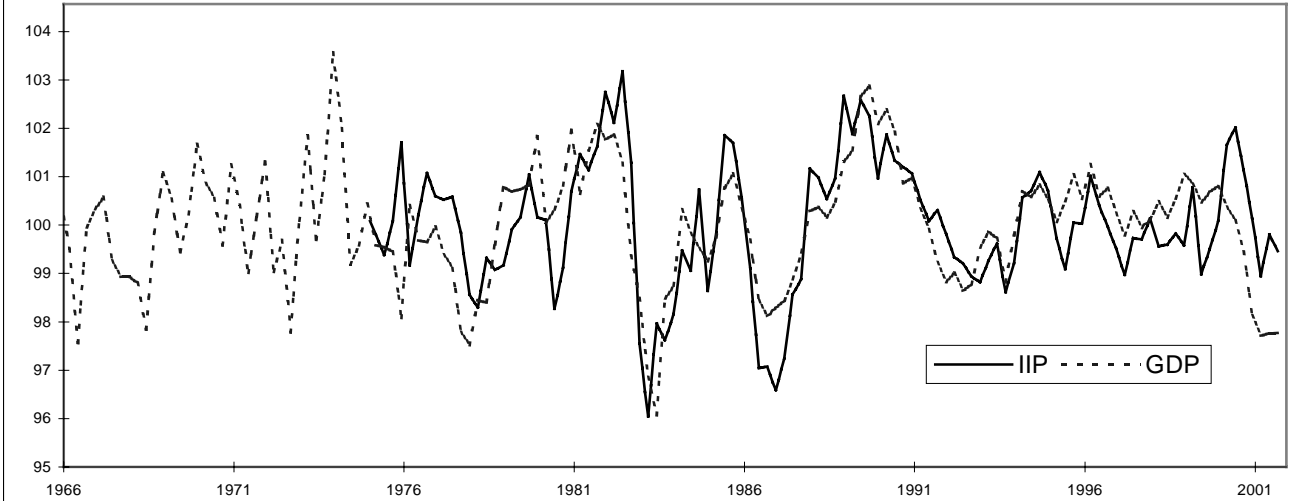
YIELD ON 10-YEAR TREASURY BONDS (% per annum)

Table 1. Reference chronology

	Industrial Production Index	GDP	Final Reference Chronology
T		q3-61	q3-61
P		q4-64	q4-64
T		q2-66	q2-66
P		q1-67	[q1-67]
T		q2-68	[q2-68]
P		q4-69	q4-69
T		q3-72	q3-72
P		q4-73	q4-73
T	q2-75		[q2-75]
P	q3-76		[q3-76]
T	q1-78	q4-77	q4-77
P	q3-79		[q3-79]
T	q2-80		[q2-80]
P	q2-82	q3-81	q3-81
T	q1-83	q2-83	q2-83
P	q2-85	q3-85	q3-85
T	q4-86	q3-86	q3-86
P	q2-89	q3-89	q3-89
T	q4-92	q2-92	q2-92
P	q3-94	q3-94	q3-94
T	q2-95	q1-95	[q1-95]
P	q1-96	q1-96	[q1-96]
T	q1-97	q1-97	q1-97
P		q4-98	[q4-98]
T			[q2-99]
P	q2-00		q1-00
T			q1-01
P			

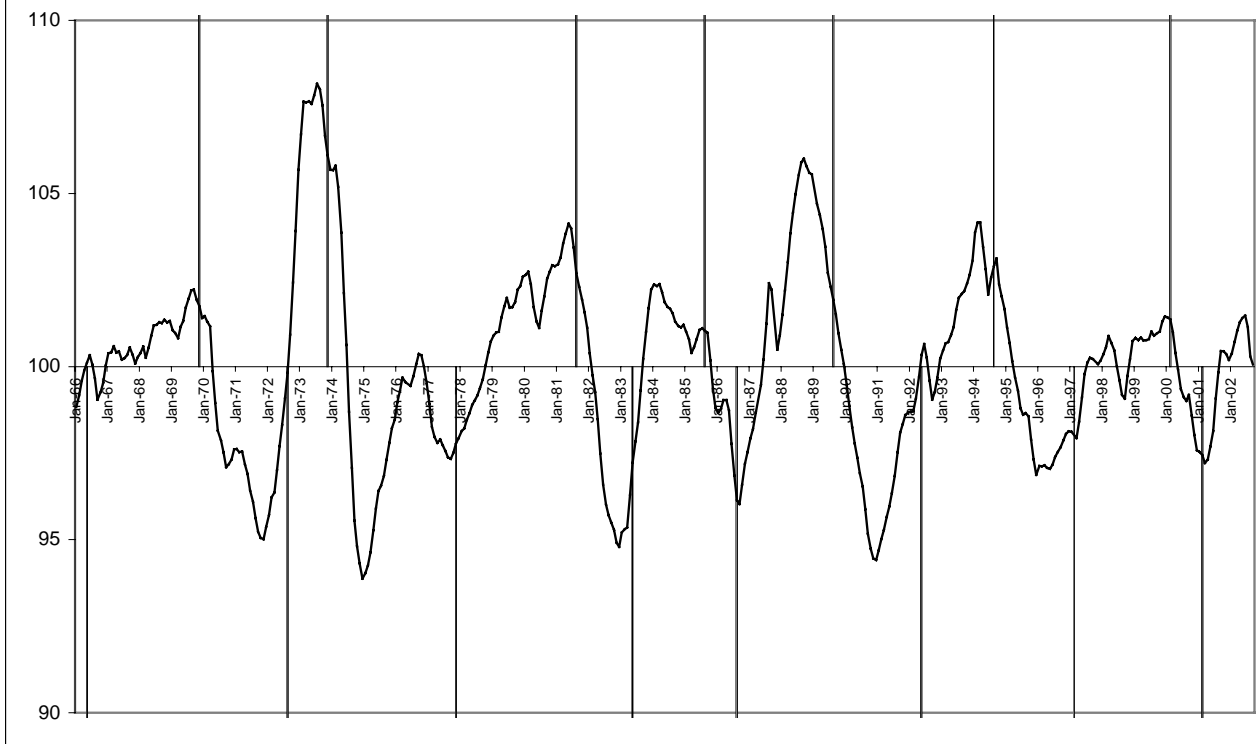
[]: Minor cycle

**Chart 1. Industrial Production Index and Gross Domestic Product
Ratio to trend series ⁽¹⁾**



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Australia



AUSTRIA

The last update of the CLI for Austria was completed more than 10 years ago. Therefore, the chronologies of Turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken.

Six component series from the previous CLI were not included in the revised CLI. Indeed, the 'Deflated money supply' terminated in 1998, the 'Industrial production index: basic metals' is neither timely nor reliable and monthly business tendency surveys exist for total industry ('Production: future tendency' and 'Order books: level'), thus replacing the quarterly series. In addition, to make the CLI for Austria more national, it was decided to drop the component series aggregating the CLIs of France, Germany, the United Kingdom and Italy, as well as 'net new orders in the German manufacturing industry'.

The revised CLI contains six monthly series which are very timely. These component series are an indicator of monetary policy: the 'Spread of interest rates' (difference between the long-term rate and the 3-month rate), an employment series: 'Unfilled vacancies' and four tendency surveys: 'IFO business climate', 'Consumer confidence indicator' and two business surveys for total industry, i.e.: 'Production: future tendency' and 'Order books: level'.

The consistency between TPs detected for the index of industrial production (IIP) and for GDP is good overall, although IIP seems to slightly lag GDP in the 1970s but slightly lead GDP during the 1990s.

New set of component series

Component series from the previous CLI

None

New component series

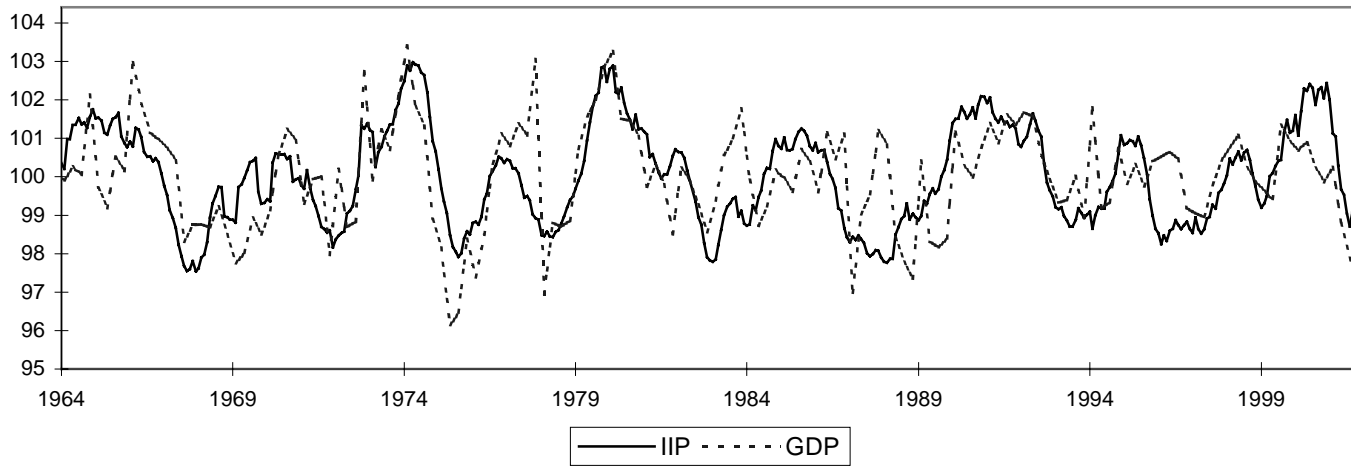
PRODUCTION: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance) – monthly series
ORDER BOOKS: LEVEL (MANUFACTURING) (BS) (% balance) – monthly series
IFO BUSINESS CLIMATE INDICATOR FOR GERMANY (BS) (Normal=100)
CONSUMER CONFIDENCE INDICATOR (NATIONAL INDICATOR) (% balance)
UNFILLED JOB VACANCIES (Persons)
SPREAD OF INTEREST RATES (% per annum) (Long-term rate minus 3-month rate)

Table 2. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T			
P	May-57		
T	Nov-58		Nov-58
P	Mar-61	q1-61	Mar-61
T	Dec-62	q1-63	Dec-62
P	Jan-65	q4-64	Jan-65
T		q2-65	
P		q1-66	
T	Feb-68	q1-69	Dec-68
P	May-70	q3-70	May-70
T	Feb-72	q4-71	Oct-71
P	Jun-74	q1-74	Feb-74
T	Oct-75	q2-75	Jun-75
P	Dec-76		[Dec-76]
T	Dec-77		[Dec-77]
P	Dec-79	q1-80	Dec-79
T	Jan-83	q4-82	Dec-82
P		q4-83	
T		q2-84	
P	Aug-85	q2-86	Mar-86
T		q1-87	
P		q4-87	
T	Feb-88	q4-88	Dec-88
P	Dec-90	q1-92	Dec-90
T	Jun-93	q4-93	Dec-93
P	Jan-95	q1-94	Jan-95
T	Feb-96	q2-97	Nov-96
P		q2-98	[Jul-98]
T		q2-99	[Jan-99]
P	May-00		May-00

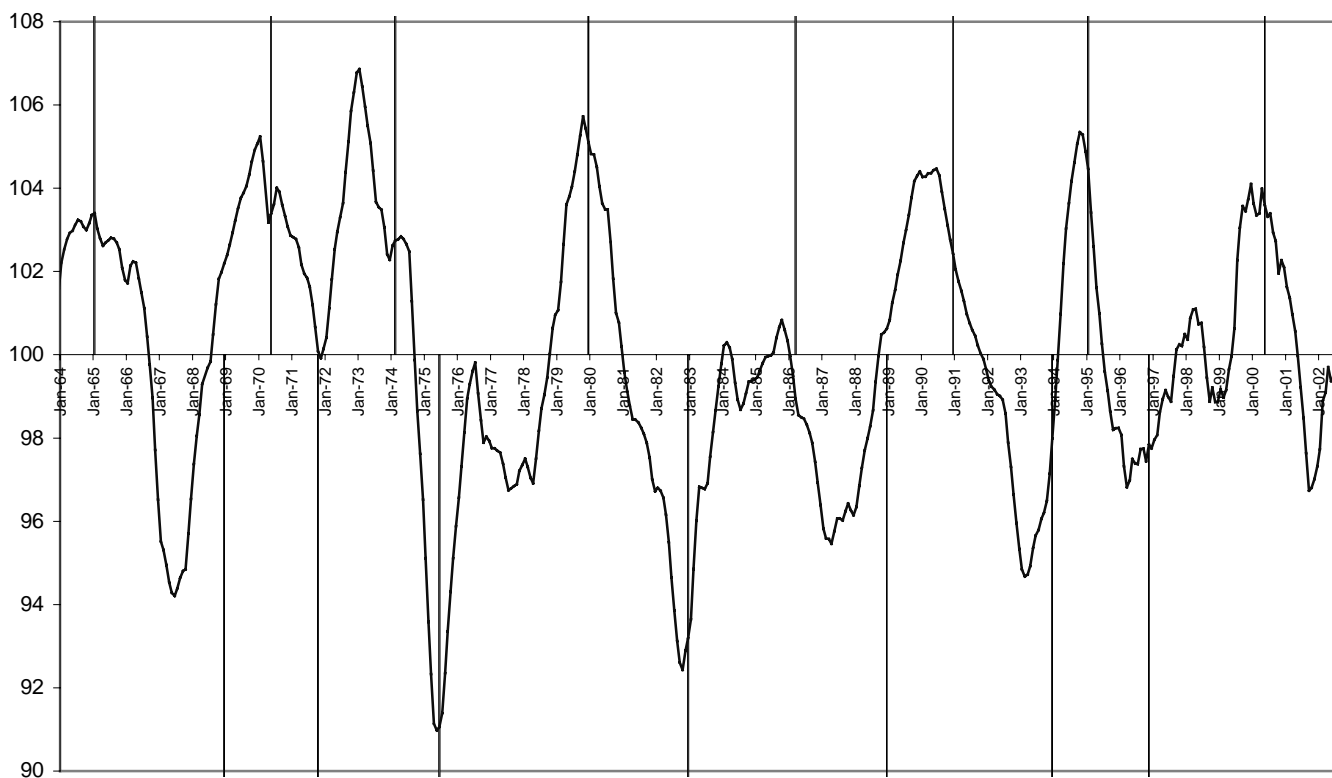
[]: Minor cycle

**Chart 1. Industrial Production Index and Gross Domestic Product
Ratio to trend series ⁽¹⁾**



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Austria



BELGIUM

The last update of the CLI for Belgium was completed in 1997, which is quite recent and thus, no major changes in the composition of this CLI were expected.

The four business survey results ('Production: tendency', 'Employment: future tendency', 'Demand: future tendency' and 'Export orders inflow: tendency') continue to show good performances and have been retained as component series.

The series 'Export' was dropped since it was found not to be timely and rather coincident. Furthermore, there is already another component series relating to foreign trade ('Export orders inflow (BS)'). The CLI for Netherlands was dropped from the list of component series, as an objective of the update of the OECD CLIs was to minimise the use of series from foreign countries.

On the other hand, the series 'Consumer confidence indicator' from the European Commission was included in the new CLI. This series is very timely and shows satisfactory lead properties.

The new CLI does not include component series from the financial sectors. It was mentioned in the report for the previous revision of the Belgium CLI that financial series were no longer in phase with the growth cycles. However, the share prices series for Belgium and for the United States was tested as potential component series in this study, however they did not bring any significant improvement to the CLI.

As a consequence, the proportion of qualitative component series in the Belgian CLI is high.

The monthly series used in the determination of the reference chronology is the index of industrial production (IIP) including construction. There is satisfactory consistency between the chronology of TPs for this series and the chronology for GDP, in the sense that every cycle in one series corresponds to a cycle in the other. GDP slightly leads the IIP including construction for some periods.

New set of component series

Component series from the previous CLI

NEW PASSENGER CAR REGISTRATIONS (Number)

EMPLOYMENT (MANUFACTURING): FUTURE TENDENCY (BS) (% balance)

EXPORT ORDERS INFLOW (MANUFACTURING): TENDENCY (BS) (% balance)

DEMAND (MANUFACTURING): FUTURE TENDENCY (BS) (% balance)

PRODUCTION (MANUFACTURING): TENDENCY (BS) (% balance)

New component series

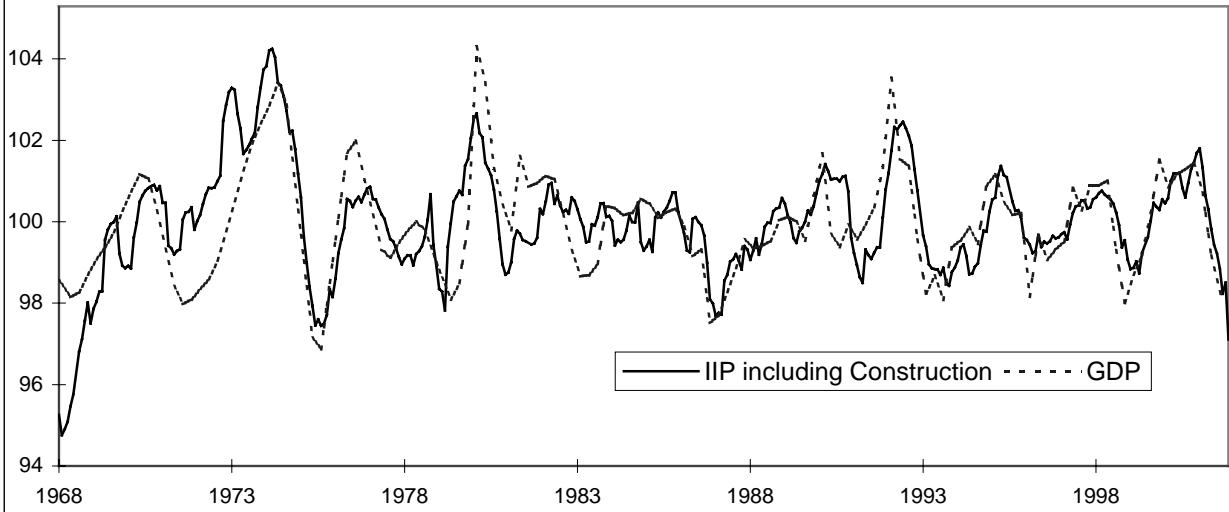
CONSUMER CONFIDENCE INDICATOR (EUROPEAN COMMISSION) (% balance)

Table 1. Reference chronology

	Industrial production index including construction	GDP	Final Reference Chronology
T			
P		q2-62	
T		q2-63	
P		q3-64	
T		q2-68	
P	Dec-70	q2-70	Jul-70
T	May-71	q3-71	May-71
P	Jan-74	q2-74	Jun-74
T	Aug-75	q3-75	Aug-75
P	Feb-77	q3-76	Apr-76
T	Feb-78	q3-77	Sep-77
P	Dec-79	q2-78	Dec-79
T	Dec-80	q2-79	Dec-80
P	Feb-82	q1-80	[Feb-82]
T	Apr-84	q1-83	[Dec-82]
P	Sep-85	q4-84	Sep-85
T	Jan-87	q4-86	Jan-87
P	Aug-90	q1-90	[Aug-90]
T	Feb-91	q3-90	[Feb-91]
P	Jul-92	q1-92	Feb-92
T	Nov-93	q3-93	Nov-93
P	Feb-95	q1-95	Feb-95
T	Feb-96	q3-96	Aug-96
P	Feb-98	q2-98	Feb-98
T	Feb-99	q4-98	Feb-99
P	Dec-00	q4-00	Dec-00

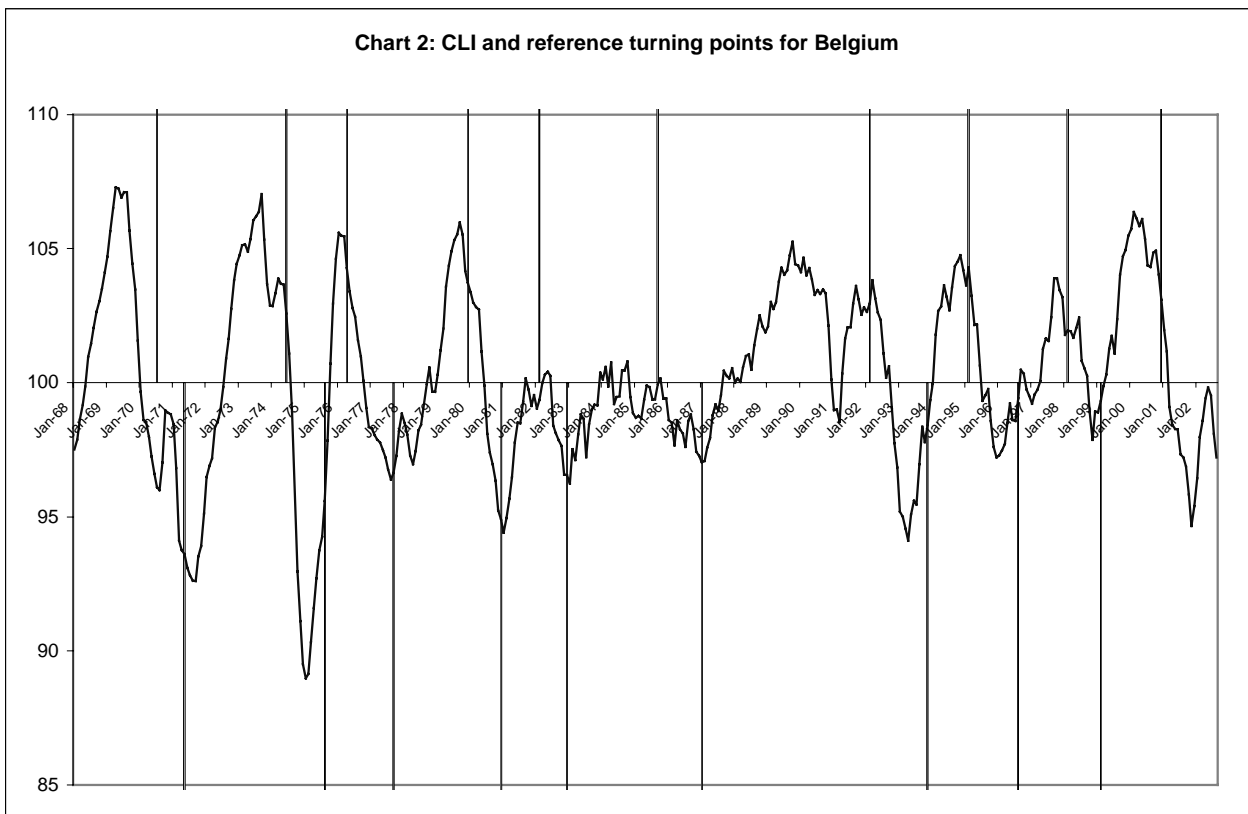
[]: Minor cycle

Chart 1. Industrial Production Index incl. Construction and Gross Domestic Product - Ratio to trend series ⁽¹⁾



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Belgium



DENMARK

The last update of the CLI for Denmark was completed more than 10 years ago. Therefore, the chronologies of turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken.

Three series from the previous CLI have been dropped. These are the two series related to construction ('Dwelling permits issued' as well as 'Total buildings started') as the construction sector is not found to be very significant and both series are not very timely. The third series, 'Terms of trade', is also not very timely.

The 'volume of petrol exports' has been included as a component related to foreign trade instead of the 'Terms of trade'. The 'Consumer confidence indicator (from Statistics Denmark)' was also included as it shows interesting statistical properties (median lead and a standard deviation of the lead).

Six component series have been retained from the previous CLI. These comprise one series from the labour sector ('Employment: future tendency'), one from the production sector ('Production: future tendency'), two from the Consumption sector ('Retail sales' and 'Passenger car registrations') and two financial series ('Money supply M1' and the 'Official discount rate').

The reference chronology has been defined using the quarterly GDP and the volume of sales in manufacturing industry. It is characterised by a relatively small number of major turning points, the latest one being a trough in December 1996. The OECD Economic Department confirmed the strong stability of the Danish economy since then.

New set of component series

Component series from the previous CLI

TOTAL VOLUME OF RETAIL SALES (1995=100)
NEW PASSENGER CAR REGISTRATIONS (Number)
EMPLOYMENT: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)
PRODUCTION: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)
OFFICIAL DISCOUNT RATE (% per annum)
DEFLATED MONEY SUPPLY M1 (DKK)

New component series

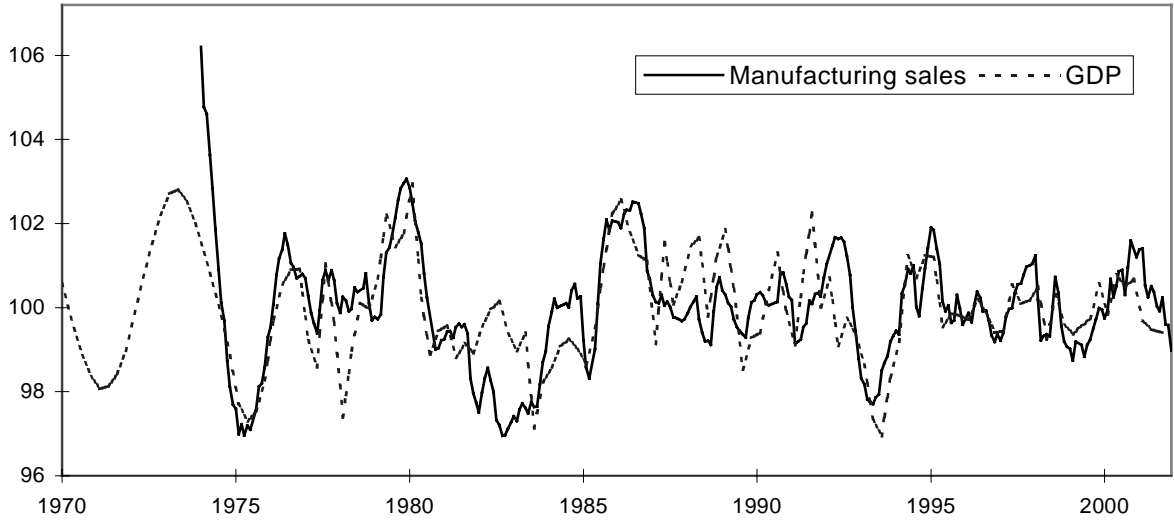
PETROL EXPORTS DEFLATED BY CONSUMER PRICE INDEX (DKK)
CONSUMER CONFIDENCE INDICATOR (NATIONAL INDICATOR) (% balance)

Table 1. Reference chronology

	Sales in Manufacturing	GDP	Final Reference Chronology
P			
T		q3-60	
P		q1-62	
T		q2-63	
P		q4-64	
T		q1-68	
P		q3-69	
T		q1-71	
P		q2-73	
T	Apr-75	q2-75	
P	May-76	q4-76	May-76
T	Jan-79	q1-78	Mar-78
P	Oct-79	q1-80	Oct-79
T		q2-81	
P		q3-82	
T	Sep-82	q3-83	Sep-82
P	May-84		[May-84]
T	Mar-85		[Mars-85]
P	Aug-86	q1-86	Nov-85
T	Jul-88	q1-87	Jan-87
P	Nov-90	q1-89	Nov-90
T	Apr-91	q3-89	[Avr-91]
P	Feb-92	q3-91	[Fev-92]
T	May-93	q3-93	May-93
P	Dec-94	q4-94	Dec-94
T	Dec-96	q4-96	Dec-96
P	Jun-98	q2-97	[Jun-98]
T	Dec-98	q1-99	[Dec-98]
P	Dec-00	q2-00	[Dec-00]
T	Jun-01		

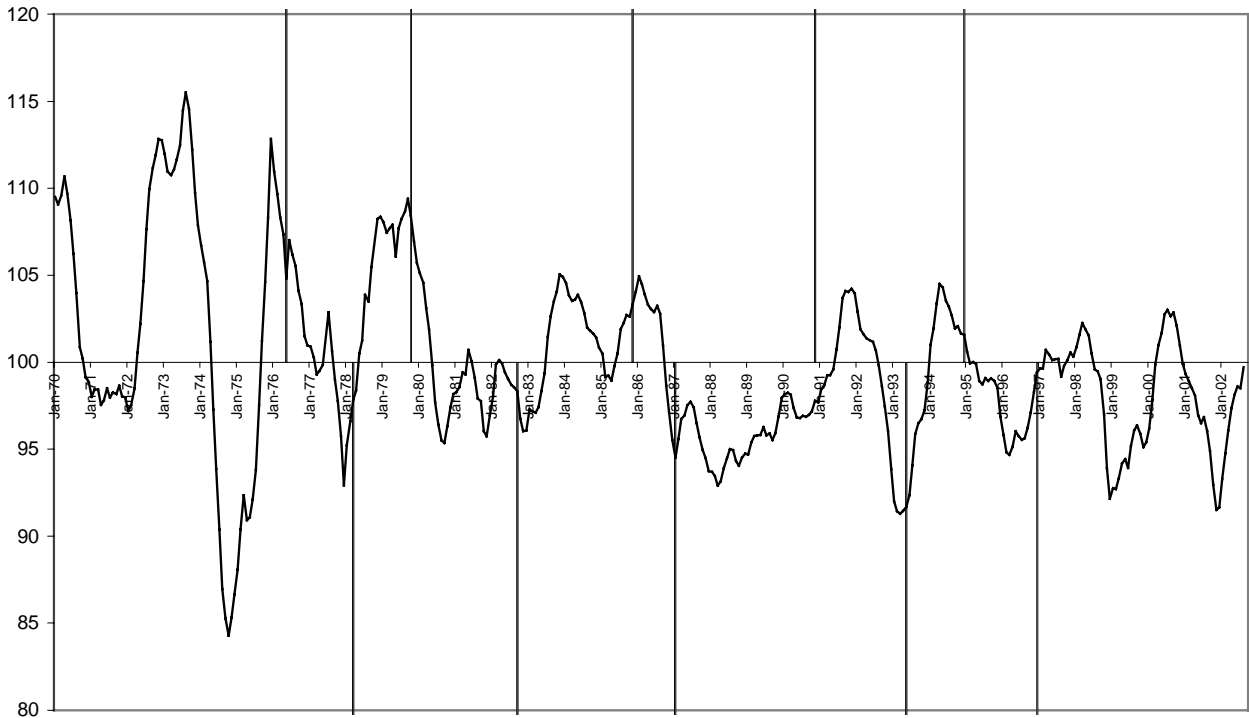
[]: Minor cycles

**Chart 1. Manufacturing sales and Gross Domestic Product
Ratio to trend series ⁽¹⁾**



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Denmark



FINLAND

The last update of the CLI for Finland was completed more than 10 years ago. Therefore, the chronologies of turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken. In particular, the timeliness of the previous CLI had strongly deteriorated.

Three financial component series in the previous CLI had ceased to be updated. The 'Money supply M1' ceased following the creation of the European Monetary Union at the end of 1998. The series 'Reserve assets: central bank' and 'Reserve assets: other than central bank' also ceased since 1998.

The component series 'Volume of exports, wood products' was not very timely and was therefore dropped. The other existing export series, i.e. 'Volume of exports, paper products' was retained.

Five business survey results were included in the previous CLI. Only three of them have been kept in the new one: 'Order books: tendency', 'Production: tendency' and 'Firms expecting equipment bottleneck'. These survey results are quarterly.

The five other component series of the new CLI are newly included series. These comprise one series from the consumption sector ('Consumer price index: all items'), one from the production sector ('Producer price index: all items'), two financial series ('Share prices' and the 'Spread of interest rate') as well as the 'Consumer confidence indicator' from the European Commission.

The final CLI does not include component series from the labour sector, since these series have been considered to be rather coincident or lagging.

The reference chronology for Finland was obtained using a monthly indicator of total output from Statistics Finland. The number of major cycles is relatively small.

New set of component series

Component series from the previous CLI

ORDERS INFLOW: TENDENCY (MANUFACTURING) (BS) (% balance)
FIRMS EXPECTING EQUIPMENT BOTTLENECK (MANUFACTURING) (BS) (% balance)
PRODUCTION: TENDENCY (MANUFACTURING) (BS) (% balance)
VOLUME OF EXPORTS OF PAPER PRODUCTS (1995=100)

New component series

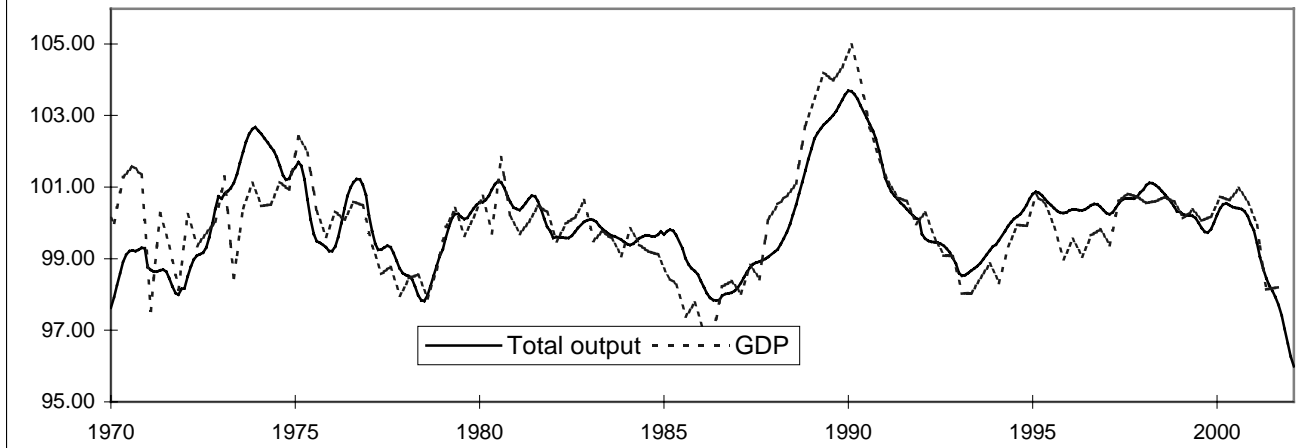
CONSUMER PRICE INDEX: ALL ITEMS (1995=100)
PRODUCER PRICE INDEX, ALL ITEMS (1995=100)
SHARE PRICES: HEX ALL SHARE INDEX (1995=100)
CONSUMER CONFIDENCE INDICATOR (EUROPEAN COMMISSION) (% balance)
SPREAD OF INTEREST RATES (% per annum) (Long-term rate minus 3-month rate)

Table 1. Reference chronology

	Monthly index of total output	GDP	Final Reference Chronology
P		q1-62	
T		q1-63	
P		q3-65	
T		q1-66	
P		q4-66	
T		q3-68	
P	Jul-70	q3-70	Jul-70
T	Nov-71	q4-71	Nov-71
P	Dec-73	q1-75	Feb-75
T	Dec-75	q4-75	Dec-75
P	Oct-76	q3-76	Oct-76
T	Jul-78	q3-78	Jul-78
P	Jul-80	q3-80	Jul-80
T	May-82	q1-82	May-82
P	Jan-83	q4-82	[Jan-83]
T	Feb-84		[Jan-84]
P	Mar-85		Mar-85
T	Jun-86	q2-86	Jun-86
P	Feb-90	q1-90	Feb-90
T	Mar-93	q1-93	Mar-93
P	Mar-95	q1-95	[Mar-95]
T	Mar-96	q4-95	[Mar-96]
P	Apr-98	q3-97	[Apr-98]
T	Oct-99	q3-99	[Oct-99]
P	Aug-00	q3-00	Aug-00

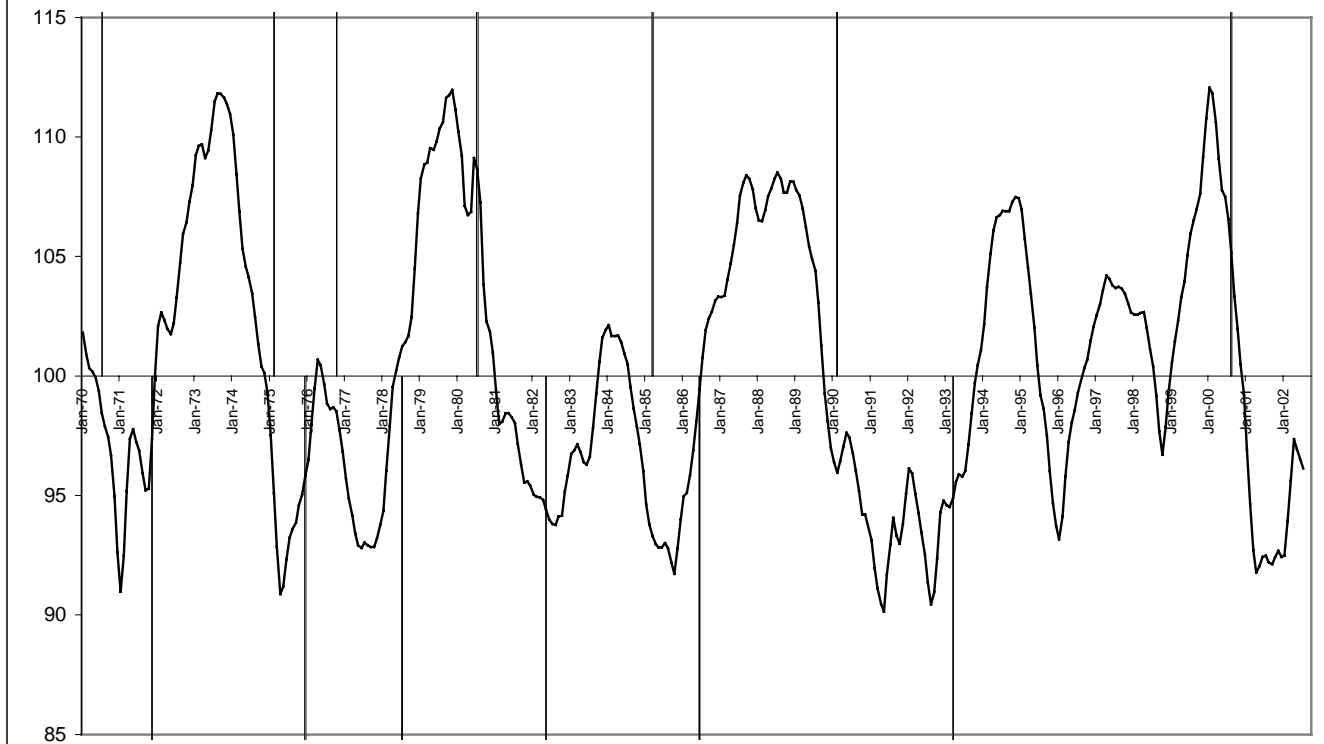
[]: Minor cycle

Chart 1. Monthly total output and Gross Domestic Product - Ratio to trend series ⁽¹⁾



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Finland



IRELAND

The last update of the CLI for Ireland was completed more than 10 years ago. Therefore, the chronologies of Turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken.

The previous CLI included a particularly high number of financial indicators (three series) as component series ('Money supply (M1)', the '3-month interest rate' and the 'ISEQ share price index'). The series 'Money supply (M1)' was not retained since it was stopped in December 1998, following the advent of the European Monetary Union. The '3-month interest rate' has been replaced by the 'spread of Interest rate (difference between long-term interest rate and 3-month interbank rate)'. The spread summarises the information from long-term and short-term interest rate and shows, in addition, a very consistent lead from one month to the other.

The series 'Weekly hours of work in manufacturing' was dropped because it was quarterly and not timely. As a consequence, every component series in the new CLI are now monthly. The component series 'Employment: tendency (BS)' has been kept as the component series related to the labour market.

The 'Consumer confidence indicator (European Commission)' has been included because of its leading behaviour (median lead at all TPs: 5 months).

It should be noted that in spite of its lack of timeliness the series 'Terms of trade' has been kept because of its good cyclical performance and because none of the other series tested relating to foreign trade were satisfactory.

Three other component series have been kept from the previous CLI: 'Finished goods stocks: level (BS)', 'Order books: level (BS)' and the 'Volume of retail sales'.

The reference chronology has been based mainly on the chronology from the index of industrial production (IIP), since the GDP is annual. After consultation with the OECD Economics Department, it was decided to consider the cycle in 1980-81 as minor.

New set of component series

Component series from the previous CLI

TOTAL VOLUME OF RETAIL SALES (1995=100)
EMPLOYMENT: TENDENCY (MANUFACTURING) (BS) (% balance)
ORDERS BOOKS: LEVEL (MANUFACTURING) (BS) (% balance)
FINISHED GOODS STOCKS: LEVEL (MANUFACTURING) (BS) (% balance)
ISEQ SHARE PRICE INDEX (1995=100)
TERMS OF TRADE (1995=100)

New component series

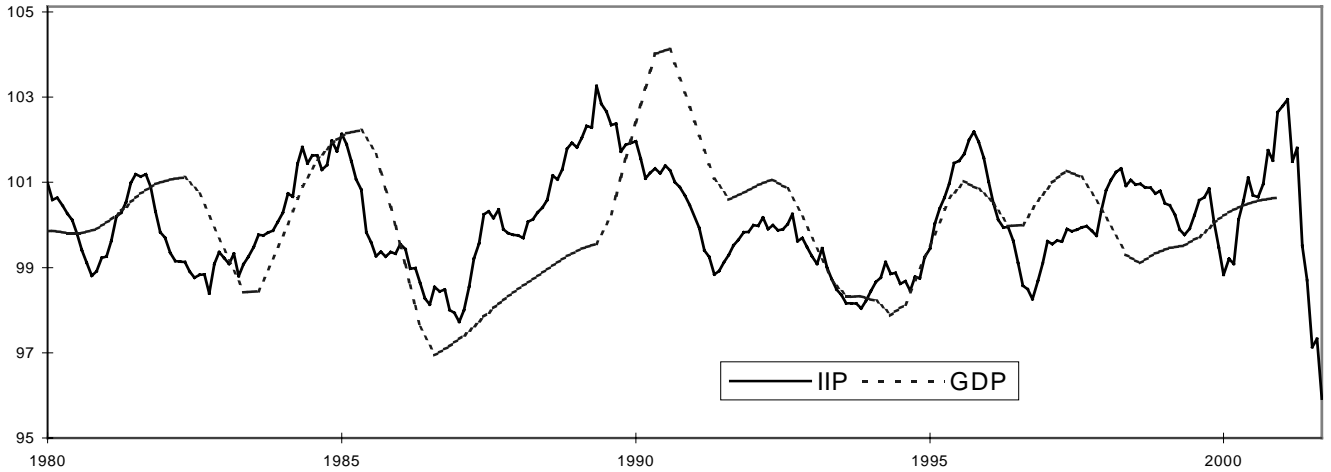
CONSUMER CONFIDENCE INDICATOR (EUROPEAN COMMISSION) (% balance)
SPREAD OF INTEREST RATES (% per annum) (Long-term rate minus 3-month rate)

Table 1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T			
P	Aug-55		Aug-55
T	Aug-58		Aug-58
P	Mar-61		Mar-61
T	Apr-63		Apr-63
P	Dec-63		Dec-63
T	May-66		May-66
P	Mar-67		
T	Sep-67		
P	Jun-69		Jun-69
T	Mar-72	q2-71	Mar-72
P	Feb-74	q3-72	Feb-74
T	Oct-75	q2-74	Oct-75
P		q2-75	
T		q3-76	
P	Sep-79	q3-78	Sep-79
T	Dec-80	q3-80	[Dec-80]
P	Sep-81	q2-82	[Sep-81]
T	Dec-82	q2-83	Apr-83
P	Jun-84	q2-85	Mar-85
T	Jan-87	q3-86	May-86
P	Jul-89	q3-90	Jul-89
T	Jan-94	q2-94	Jan-94
P	Dec-95	q3-95	Dec-95
T	Sep-96	q2-96	Sep-96
P	Feb-98	q2-97	Feb-98
T	Jan-00	q3-98	May-99
P	Feb-01		Feb-01

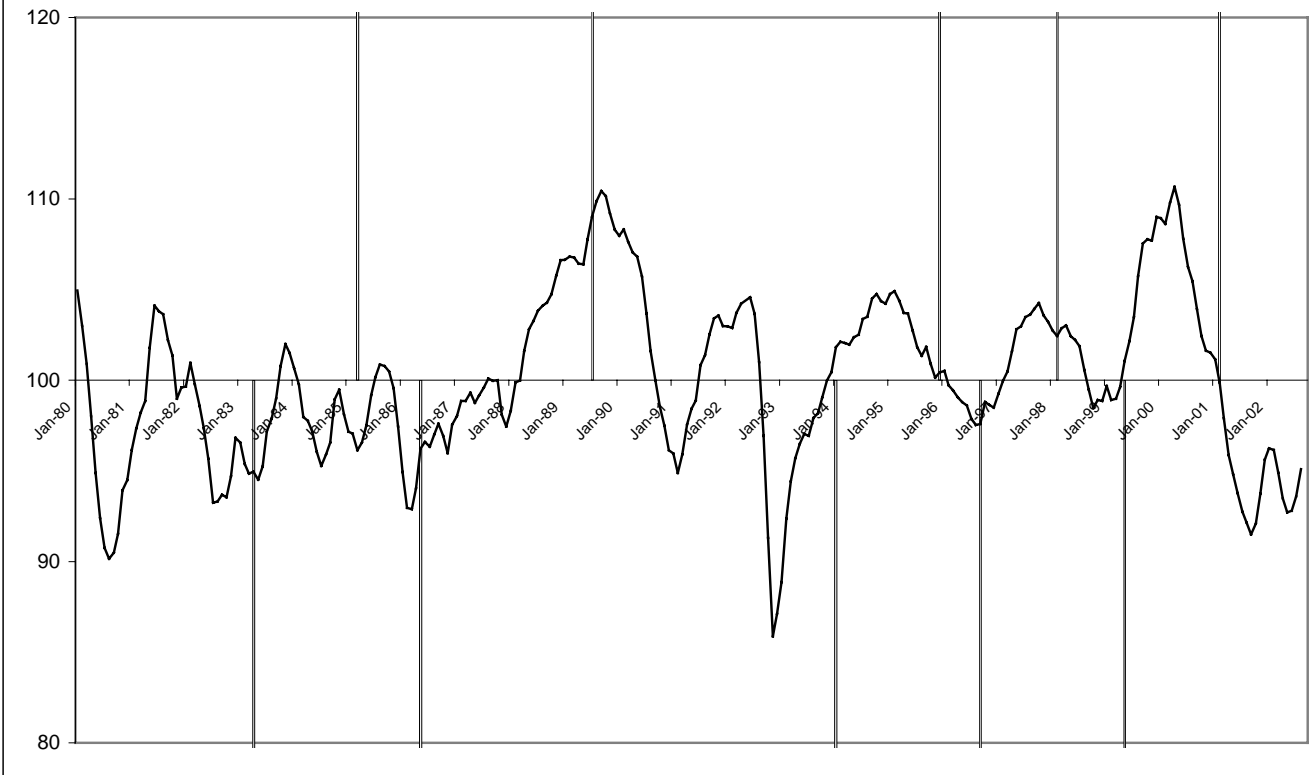
[]: Minor cycle

Chart 1. Industrial Production Index and Gross Domestic Product - Ratio to trend series ⁽¹⁾



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Ireland



NETHERLANDS

The last update of the CLI for the Netherlands was completed more than 10 years ago. Therefore, the chronologies of turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken. Furthermore, three component series from the previous CLI were no longer updated by the source: 'Terms of trade', 'Deflated savings deposits' and 'Deflated money supply (M1)'.

In addition to these three discontinued series, the series 'Total volume of retail sales' was dropped because its lead was found to be very irregular.

One new series has been included: the 'Total share price index', which shows a long and consistent lead.

The five other component series have been retained from the previous CLI. All these series are qualitative series. Four of them are Dutch business survey results ('Finished goods stocks: level', 'Order books: level', 'Orders inflow: tendency' and 'Production: future tendency') and the other is the German 'IFO Business climate indicator'.

The final CLI does not include component series from the labour sector, since these series are considered to be rather coincident or lagging.

One particularity of the Netherlands is the availability of very long-lead series. The previous CLI was the average of two composite indicators, i.e. a short-lead composite indicator and a long-lead composite indicator. During this revision it was not possible, due to resource constraints, to construct a CLI using the same approach. Therefore, the series 'Yield of long-term government bonds' and 'Producer prices - input to industry' have been dropped.

The series used to determine the reference chronology are the monthly index of production in the manufacturing industry and quarterly GDP. It should be noted that the index of production in manufacturing was found to have a very important irregular component and it has not always been very easy to determine accurate turning points from this series.

New set of component series

Component series from the previous CLI

ORDER BOOKS: LEVEL (MANUFACTURING) (BS) (% balance)
PRODUCTION: FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)
FINISHED GOODS STOCKS: LEVEL (MANUFACTURING) (BS) (% balance)
ORDERS INFLOW: TENDENCY (MANUFACTURING) (BS) (% balance)
IFO BUSINESS CLIMATE INDICATOR FOR GERMANY (Normal=100)

New component series

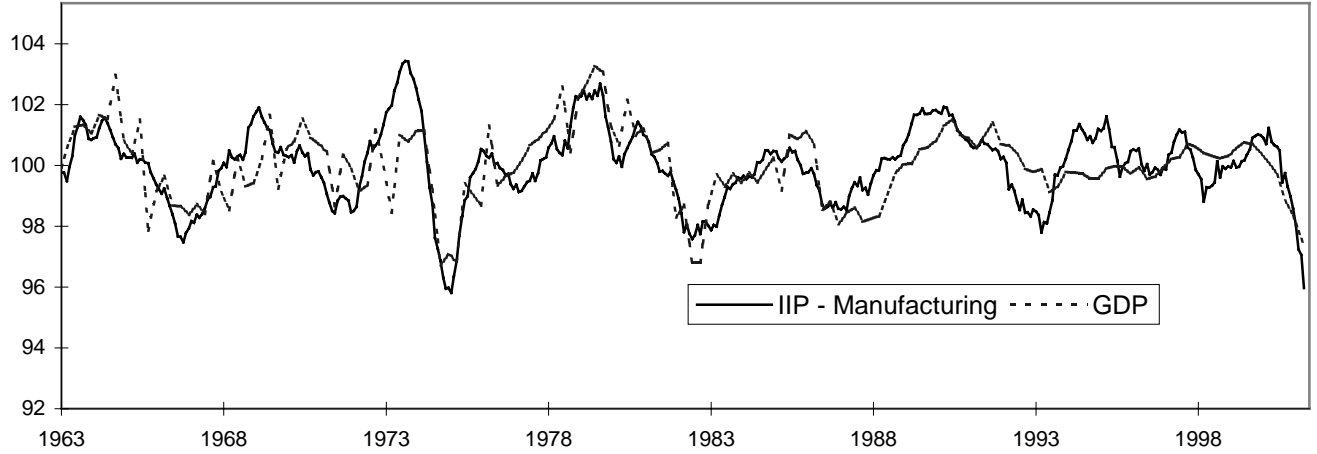
SHARE PRICES: TOTAL INDEX (1995=100)

Table 1. Reference chronology

	Industrial production index (manufacturing)	GDP	Final Reference Chronology
T			
P	Dec-56		Nov-56
T	Apr-58		Jun-58
P	Dec-60	q2-60	Sep-60
T		q3-61	
P		q3-62	
T	Feb-63	q2-63	Feb-63
P	Mar-64	q1-65	Aug-64
T	May-67	q2-67	Aug-67
P	Mar-70	q4-70	Jun-70
T	Dec-71	q3-72	Jun-72
P	Aug-74	q3-74	Jan-74
T	Aug-75	q1-75	Jul-75
P	Sep-76		[Sep-76]
T	May-78		[May-78]
P	Nov-79	q4-79	Oct-79
T	Nov-82	q4-82	Dec-82
P	Jan-85	q2-86	Oct-84
T	May-86		[May-86]
P	Jan-87		[Jan-87]
T	Apr-88	q1-88	Aug-87
P	Feb-91	q4-90	Dec-90
T		q3-91	
P		q1-92	
T	Jun-93	q4-93	Dec-93
P	Jun-95	q4-95	Feb-95
T	Aug-98	q4-96	Dec-96
P		q1-98	[Jan-98]
T		q1-99	[Dec-98]
P	Jun-00	q4-99	Jun-00

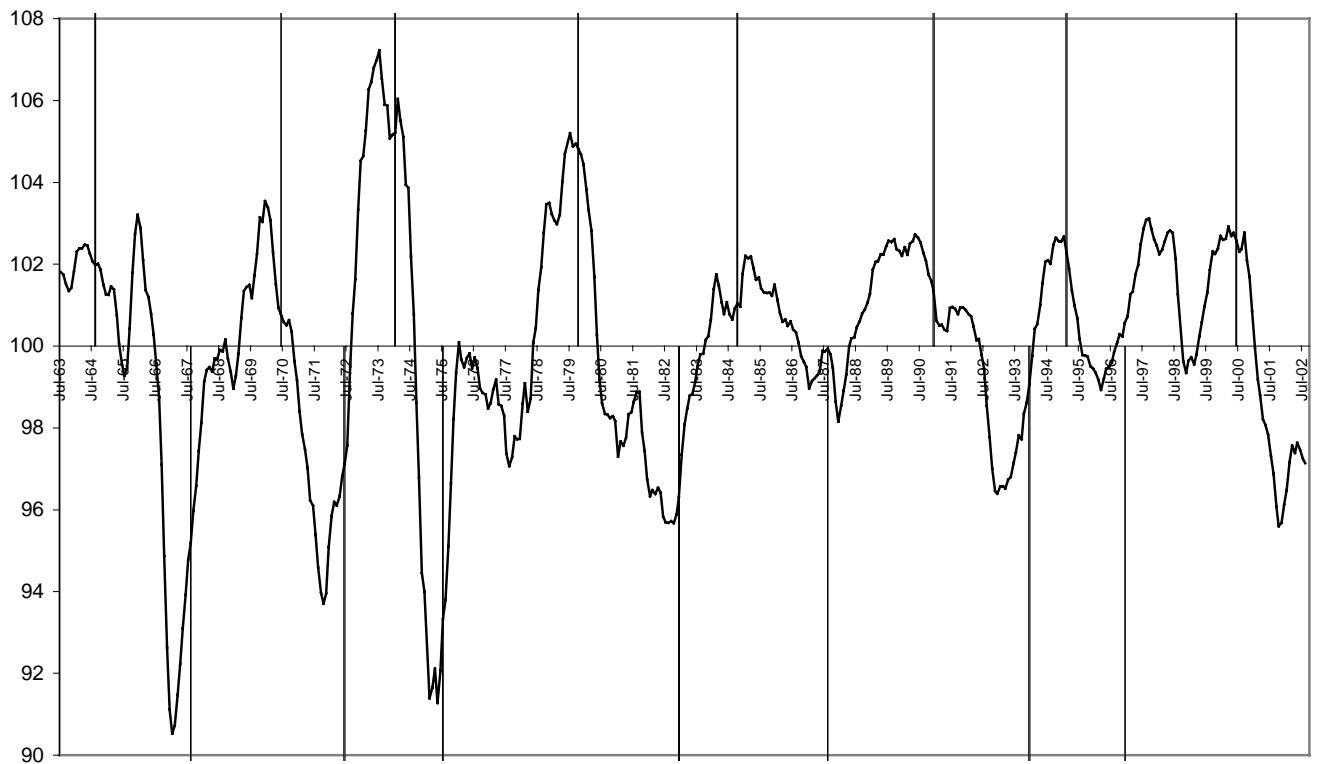
[]: Minor cycle

Chart 1. Industrial Production Index (Manufacturing) and Gross Domestic Product - ratio to trend series ⁽¹⁾



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Netherlands



NORWAY

The last update of the CLI for Norway was completed in 1997, which is quite recent. However, several component series in the CLI were either not very timely or no longer updated. Therefore, new potential component series had to be tested. Business survey results are quarterly and the number of potential monthly component series was rather small. Therefore, some of the component series selected in the new CLI do not meet all the statistical or practical criteria usually required.

Two series from the previous CLI have been retained: the 'Share price index (industrials)' and the business survey series 'Export orders inflow: tendency'.

Four new series have been included in the CLI. One is the number of 'Unfilled job vacancies', which is rather coincident and has been included as a component series related to labour market in order to improve the overall timeliness of the CLI. Another is the 'Total volume of retail sales' as a component series related to consumption. The third is the 'Yield of the central government bonds (6-10 years)', replacing the component series 'International basket of long-term interest rates' from the previous CLI. Finally, the business survey series 'Firms operating at full capacity' has been included as a replacement of the series 'Judgement on capacity utilisation' which was no longer updated.

The CLI for Sweden has been dropped from the list of component series, as an objective of the revision of the OECD CLIs was to minimise the use of series from foreign countries.

It was quite difficult to determine a reference chronology for Norway. The chronologies from the quarterly GDP and from the index of production in manufacturing industry have been used. After consultation with the OECD Economics Department, the cycle in the mid-1990s (1994-95) was considered as minor. As a result, as for other Scandinavian countries, the number of major turning points is rather small.

New set of component series

Component series from the previous CLI

EXPORT ORDERS INFLOW: TENDENCY (MANUFACTURING) (BS) (% balance)
SHARE PRICE INDEX (INDUSTRIALS) OSLO (1995=100)

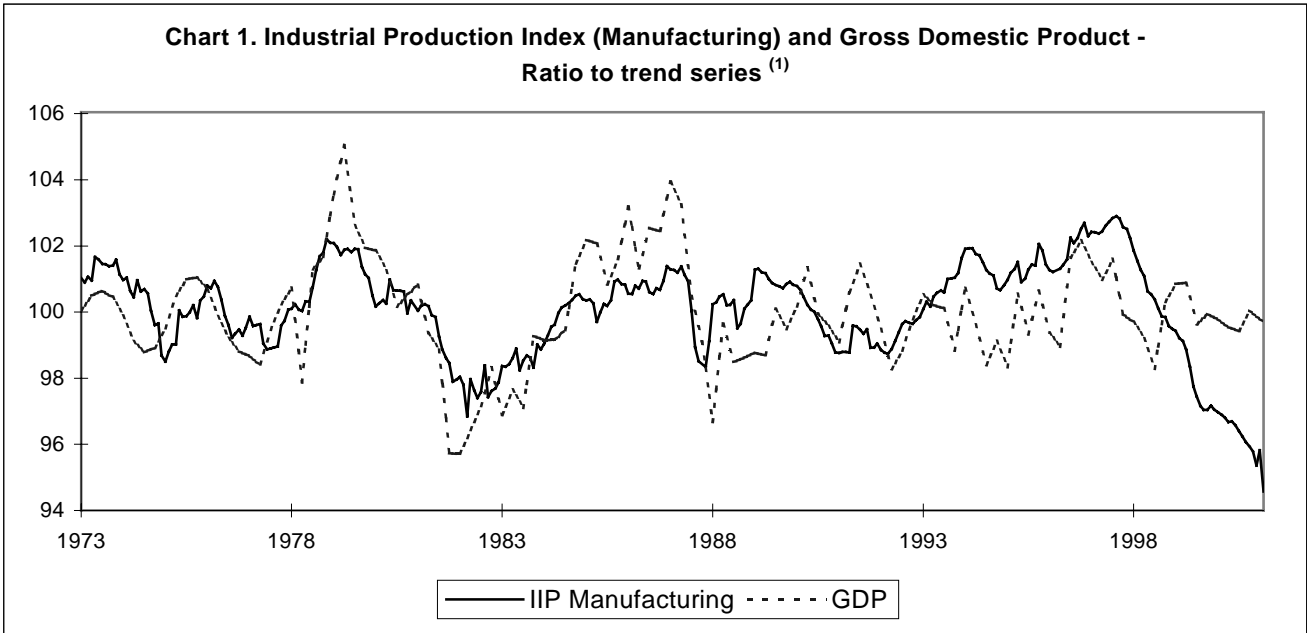
New component series

YIELD ON CENTRAL GOVERNMENT BONDS (6-10 YEARS)
JUDGEMENT ON CAPACITY UTILISATION (MANUFACTURING) (BS) (% balance)
UNFILLED JOB VACANCIES (Number)
TOTAL VOLUME OF RETAIL SALES (1995=100)

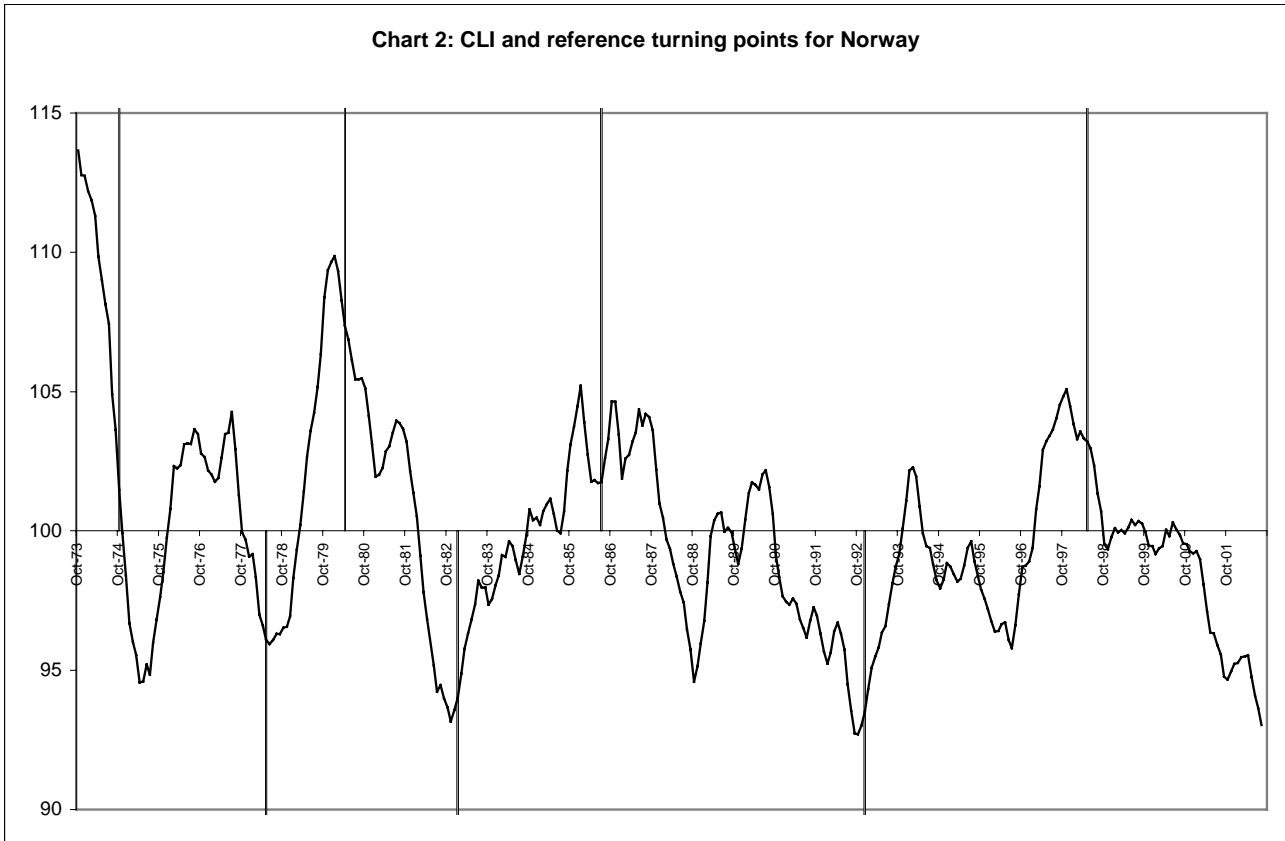
Table 1. Reference chronology

	Industrial production index (Manufacturing)	GDP	Final Reference Chronology
T	Jul-55		Jul-55
P	Apr-56		Apr-56
T	Jan-59	q2-60	Jan-59
P	Dec-60	q3-61	Dec-60
T	Mar-63	q2-63	Mar-63
P	Apr-65	q2-65	[Apr-65]
T	Dec-65	q2-66	[Dec-65]
P	Jan-67	q2-67	Jan-67
T	Apr-69	q2-68	Apr-69
P	Mar-70	q3-69	[Mar-70]
T	Mar-72	q3-70	[Mar-72]
P		q3-72	
T		q2-73	
P	Oct-74	q2-74	Oct-74
T	Dec-75	q2-75	[Dec-75]
P	Jan-77	q3-76	[Jan-77]
T	May-78	q1-78	May-78
P	Apr-80	q1-80	Apr-80
T	Jan-83	q4-82	Jan-83
P		q4-87	Jul-86
T		q4-88	
P	Dec-89	q1-91	
T	Jul-92	q4-91	Dec-92
P		q2-92	
T		q1-93	
P	Dec-94	q4-93	[Nov-94]
T	Oct-95	q4-95	[Aug-95]
P	May-98	q3-97	May-98
T		q2-99	
P		q1-00	
T		q2-01	

[]: Minor cycle



(1) Trend is computed using turning points determined automatically.



PORTUGAL

The last update of the CLI for Portugal was completed more than 10 years ago. Therefore, the chronologies of Turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken. One of the main difficulties encountered in the revision of the CLI for Portugal, is the rather small number of potential component series with long historical data.

The updated CLI for Portugal contains three new component series, i.e. one business tendency survey series and two real indicators. The three new series are: the monthly business tendency survey series 'Production: future tendency', which is very timely and has a good median lead; the employment series, 'Unfilled vacancies', which has a long historical data (data are available from 1974); the financial series, 'Share prices', which is very timely and regular.

Two business survey series ('Order books: level' and 'Export order books: tendency') have been retained from the previous CLI because they still perform well as leading indicators.

Three component series were dropped from the previous CLI for the following reasons: The 'industrial production index for chemical products' is very irregular (with an MCD equal to 6) and not significant for the Portuguese economy. The construction series, 'permits issued for non-residential buildings', is quarterly, not very timely, and rather lagging. The business survey series, 'Stocks of raw materials: level' is quarterly.

Two cycles from the IIP, which do not correspond to cycles from the GDP, have been considered as minor. Moreover, the 1995 cycle of the GDP can also be considered as minor.

New set of component series

Component series from the previous CLI

INDUSTRIAL PRODUCTION INDEX: ELECTRICITY, GAS AND WATER (1995=100)
ORDER BOOKS OR DEMAND: LEVEL (MANUFACTURING) (BS) (% balance)
EXPORT ORDER BOOKS OR DEMAND: TENDENCY (MANUFACTURING) (BS) (% balance)

New component series

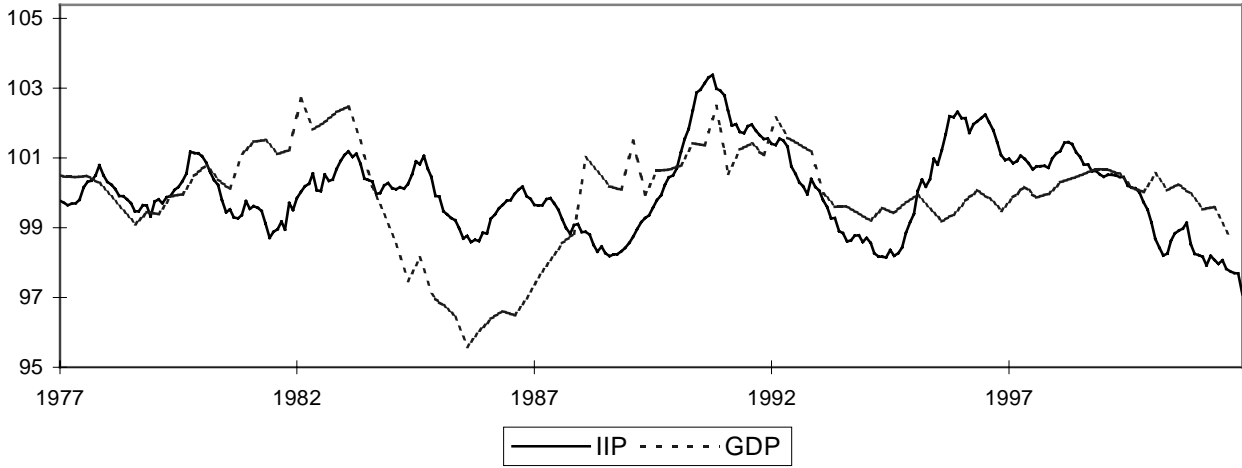
PRODUCTION : FUTURE TENDENCY (MANUFACTURING) (BS) (% balance)
UNFILLED JOB VACANCIES (Number)
SHARE PRICES: BVL GENERAL SHARE PRICE INDEX

Table 1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
P	Jan-74	q4-73	Aug-73
T	Aug-76	q3-75	Aug-75
P	Sep-77	q4-76	Sep-77
T	Oct-78	q3-78	Oct-78
P	Aug-79		[Aug-79]
T	Aug-81		[Aug-81]
P	Feb-83	q1-83	Feb-83
T	Sep-85	q3-85	Sep-85
P	Sep-86		[Sep-86]
T	Sep-88		[Sep-88]
P	Aug-90	q1-92	Aug-90
T	Oct-94	q1-94	Oct-93
P	Dec-95	q1-95	[Dec-95]
T	Sep-97	q3-95	[Sep-97]
P	May-98	q4-98	May-98

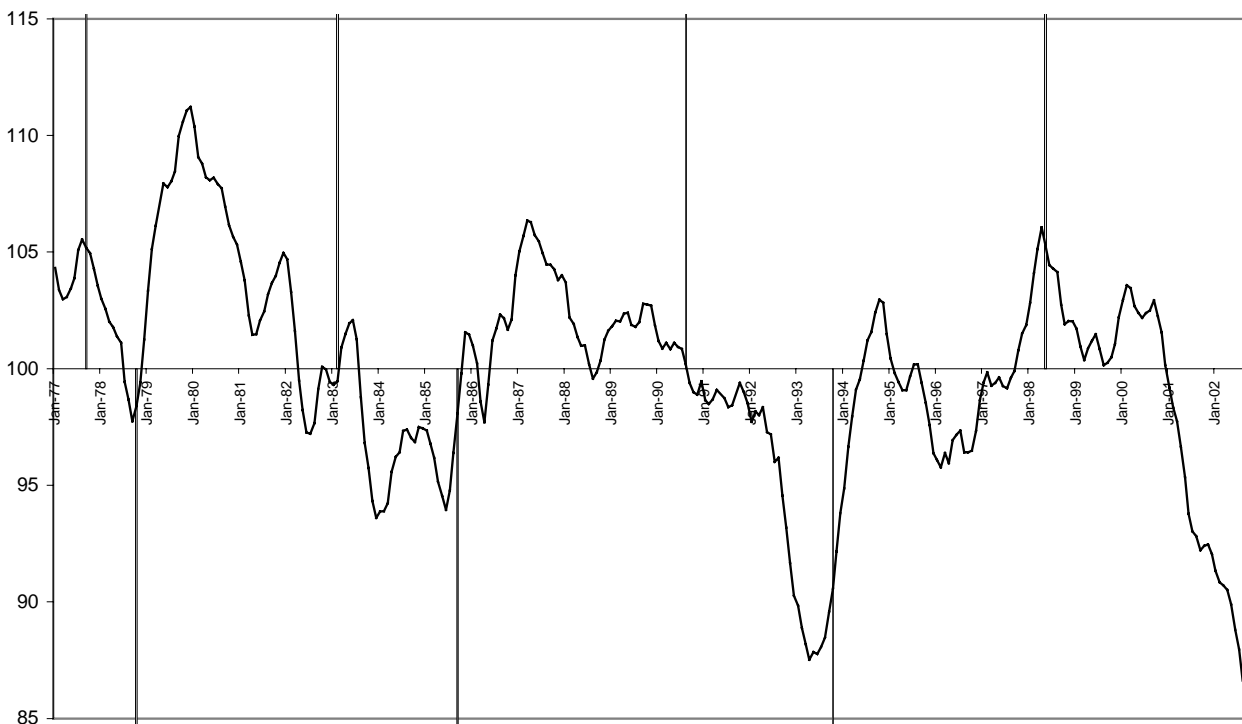
[]: Minor cycle

Chart 1. Industrial Production Index and Gross Domestic Product - Ratio to trend series
(1)



(1) Trend is computed using turning points determined automatically.

Chart 2: CLI and reference turning points for Portugal



SWEDEN

The last update of the CLI for Sweden was completed more than 10 years ago. Therefore, the chronologies of Turning points were not up-to-date and a careful examination of the composition of the CLI for this country needed to be undertaken. The statistical performances of the previous CLI were still satisfactory but many component series were quarterly or not very timely.

Four business survey series were included in the previous CLI ('Export orders inflow: tendency', 'Order books: level', 'Purchase price of raw material: tendency' and 'Finished goods stocks: level'). So far, they have all been used as quarterly series. However, for recent periods, it seems that monthly data have become available. It was therefore decided to retain this series and to progressively replace quarterly data with monthly data as longer historical data become available for the latter.

The previous CLI contained a particularly high number (four) of financial component series (the 'Money supply: M3', the 'AGFX share price index', the 'official discount rate' and the 'yield on 5-year government bonds'). The series 'Money supply (M3)' is not timely and, was therefore not kept in the new CLI. The 'Official discount rate' has also been dropped, because the series will be stopped in a near future. The two other financial series were kept.

The three other component series have been retained from the previous CLI as they continue to show satisfactory properties. These are the 'Volume of net new orders', the 'Number of notices of layoffs' and 'Overtime hours'.

The chronology of turning points from the index of industrial production (IIP) is quite consistent with the chronology from the GDP. However, IIP shows an additional cycle in the late 1990's, which has been considered as minor.

New set of component series

Component series from the previous CLI

NOTICES OF LAY-OFFS (Number)
AGFX SHARE PRICE INDEX (1995=100)
OVERTIME HOURS WORKED (MINING AND MANUFACTURING) (%)
NET NEW ORDERS (MINING AND MANUFACTURING) (1995=100)
PURCHASE PRICE OF RAW MATERIALS: TENDENCY (BS) (% balance)
ORDER BOOKS: LEVEL (MANUFACTURING) (BS) (% balance)
FINISHED GOODS STOCKS: LEVEL (MANUFACTURING) (BS) (% balance)
EXPORT ORDERS INFLOW: TENDENCY (MANUFACTURING) (BS) (% balance)
YIELD OF LONG-TERM GOVERNMENT BONDS (% per annum)

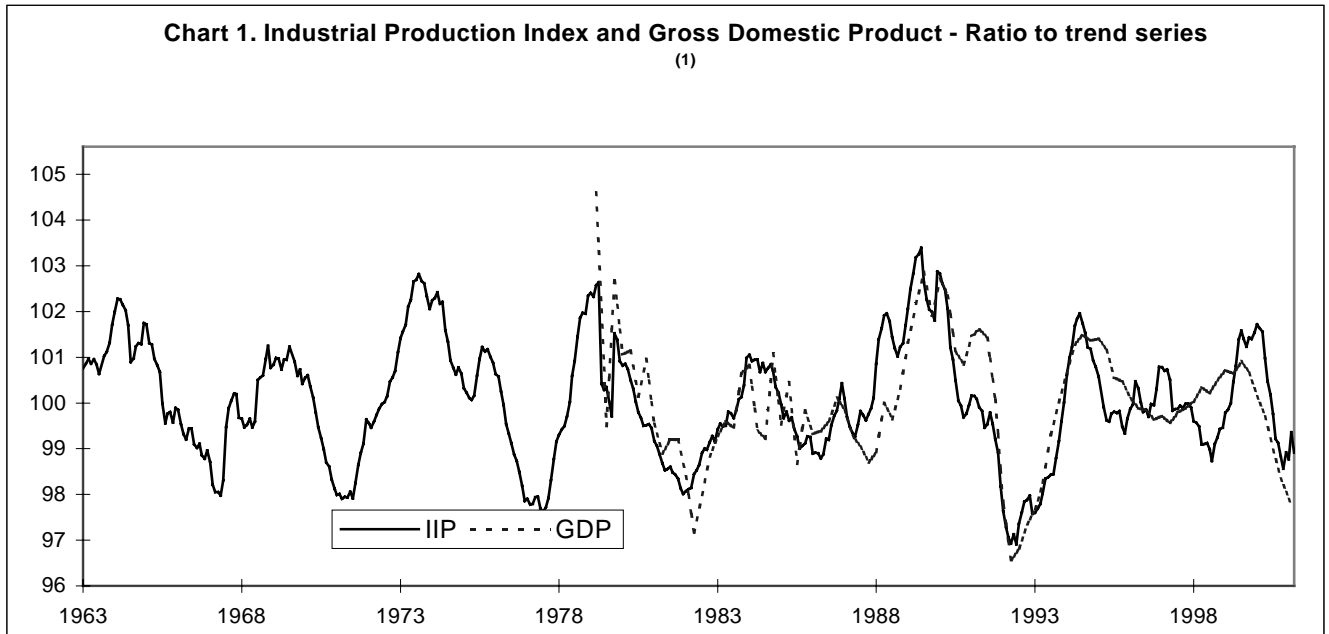
New component series

None

Table 1. Reference chronology

	Industrial production index	GDP	Final Reference Chronology
T	Mar-63		
P	Jan-65		Jan-65
T	Feb-68		Feb-68
P	Jul-70		Jul-70
T	Jan-72		Jan-72
P	Jun-74		Jun-74
T	Jan-76		Jan-76
P	Jul-76		Jul-76
T	Jun-78		Jun-78
P	Dec-79		Dec-79
T	Nov-82	Q1 1983	Nov-82
P	Dec-84	Q4 1984	Dec-84
T	Jan-87	Q2 1986	Apr-86
P		Q3 1987	
T		Q3 1988	
P	Apr-90	Q2 1990	Apr-90
T	Apr-93	Q1 1993	Apr-93
P	Apr-95	Q2 1995	Apr-95
T	Oct-96	Q1 1998	Oct-96
P	Dec-97		[Dec-97]
T	Aug-99		[Aug-99]
P	Jun-00	Q2 2000	Jun-00

[]: Minor cycle



(1) Trend is computed using turning points determined automatically.

