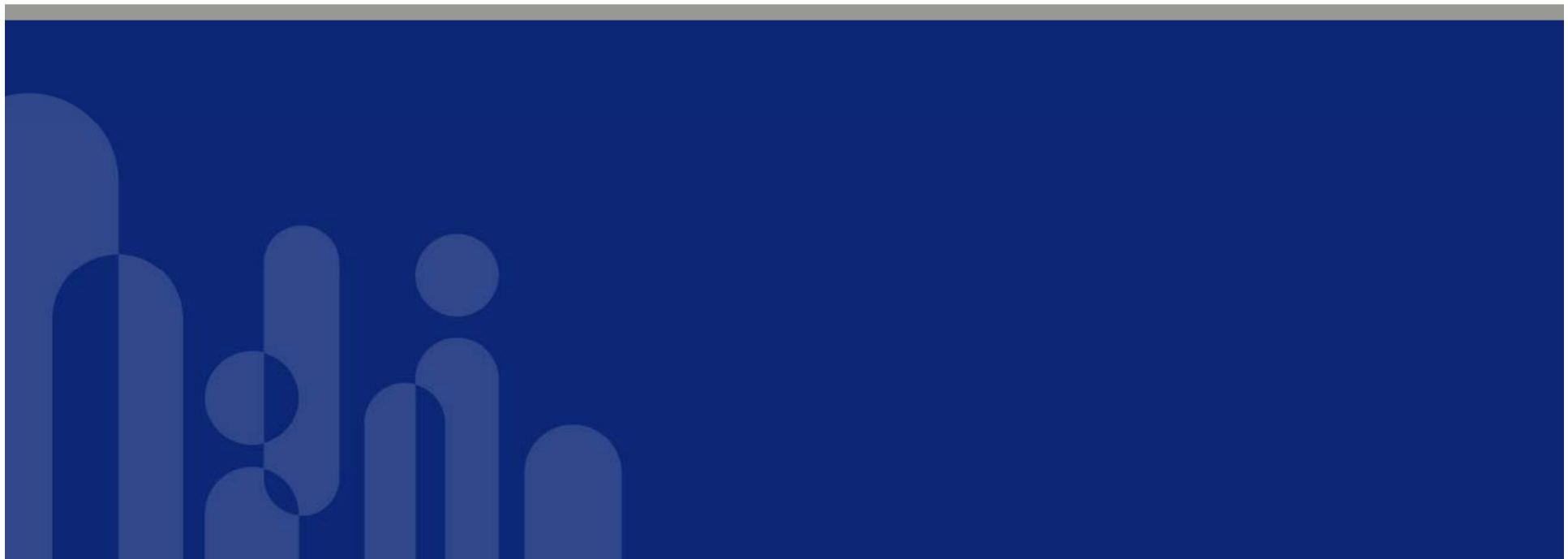




Development of a business cycle clock in Korea



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Statistics
KOREA



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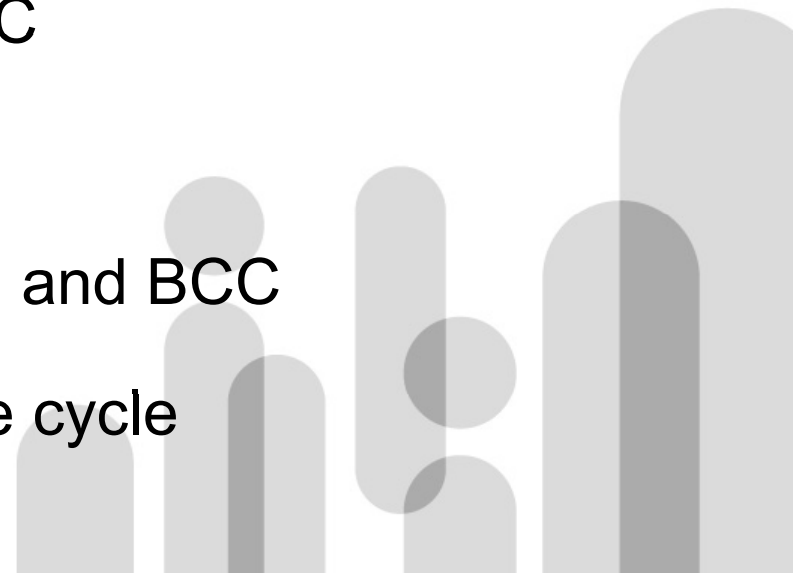
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I. Development Motivation



- Induction of people's interest in statistics and spread of an understanding of the business cycle
- support internal and external user's economic analysis
- Business Cycle Clock(BCC) is suitable for attracting user's interest and easy to understand for visualizing business cycle
- BCC can be utilized as a sub indicator of industrial activities indicator released monthly by Statistics Korea



II. Development Process



1. Schedule

'08.12	Development examination of BCC
'09.2~3	Bidding and ordering
'09.4~6	Investigate BCC development -operating status of 4 euro institute Design main screen Indicator selection and compute cycle
'09.7~9	Implementation of BCC Hearing opinion of internal and external expert
'09.10	Pilot operation
'09.12	Public service



II. Development Process



2. Participants

BCC development is performed by collaboration

- Economic Statistics Bureau
 - planning and studying calculation method

- Statistics Information Bureau
 - DB construction and management



II. Development Process



3. Studying overseas cases

		Statistics Netherlands	Statistisches Bundesamt Deutschland	EUROSTAT	OECD
Name		Business Cycle Tracer	Business Cycle Monitor	Business Cycle Clock	Business Cycle Clock
Reference nation		Home country	Home country	34 countries and EU15, EU25, etc.	34 countries including OECD member and Euro Area, OECD-Total, etc.
Number of indicator		15	12	15	4
Main screen		dot	dot	dot	trace
Additional function	Table	X	- Link to DB .Original series .TC .Trend .Cycle	.SA .MoM of SA .YoY of original series	Link to OECD Stats
	Chart	Cycle	Cycle	.SA .MoM of SA .YoY of original series	X
Narration		O	X	X	X
Filtering		HP filter	HP filter	CF filter	HP filter



II. Development Process

4. Indicator selection

The criteria for individual indicators ;

- Strong enough theoretical grounds for inclusion
- A sufficiently strong and timely relation with the business cycle
- Timely detection of major turning points in the business cycle
- No or a very small number of cycles unrelated to the general business cycle
- A sufficiently long time series should be available



II. Development Process



The criteria for the indicator set as a whole ;

- All major aspects of the economy should be represented
- The set should be balanced, no one aspect of the economy or type of indicator should dominate the Business Cycle Clock
- The whole system should be roughly coincident with the business cycle
- Major turning points in the cycle should be timely and reliably detected



II. Development Process



< Selected ten key economic indicators >

Economic Sector	Indicator	Frequency
Production	Industrial Production Index	Monthly
	Service Industry Activity Index	Monthly
Consumption	Consumer Goods Sales Index	Monthly
Investment	Index of Equipment Investment	Monthly
	Value of Construction Completed (Real)	Monthly
Trade	Exports (Real)	Monthly
	Imports (Real)	Monthly
Labor market	Number of Employed Persons	Monthly
Sentiment	Business survey Index (manufacturing)	Monthly
	Consumer Expectation Index	Monthly



II. Development Process



5. Cycle extracting method

- Consideration points on selecting method
 - small revision as monthly data added
 - identifying turning point early
 - stability of identified turning point
- Comparison of filtering method
 - PAT, single HP, double HP, CF



III. The composition of BCC interface

<Figure> Business Cycle Clock



- ① To start of timeline
- ② Previous month
- ③ Next month
- ④ To end of timeline
- ⑤ Play animation (rewind)
- ⑥ Play animation (forward)
- ⑦ Pause animation
- ⑧ Repeat animation on/off
- ⑨ Increase/decrease animation speed
- ⑩ Units on axes



IV. Example on the utilization of BCC



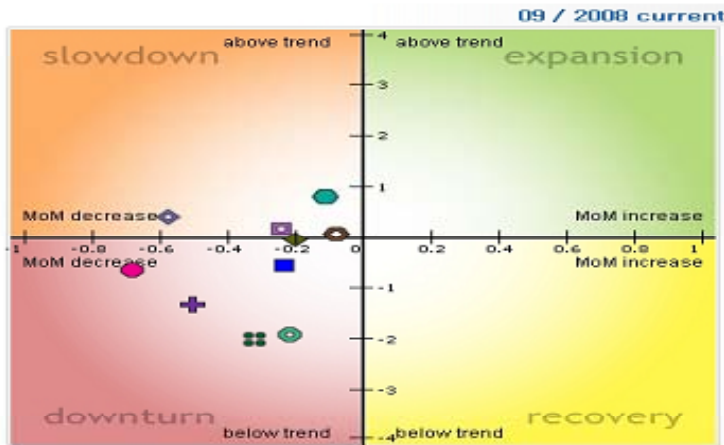
1. Recent movement of key economic indicators using the BCC
 - The global financial crisis spanned the second half of 2008 is represented in the movement of the Business Cycle Clock as key indicators were headed further into a trough.



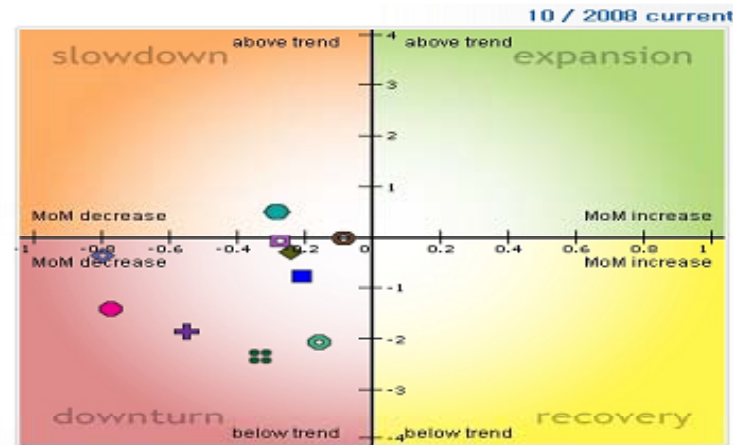
IV. Example on the utilization of BCC



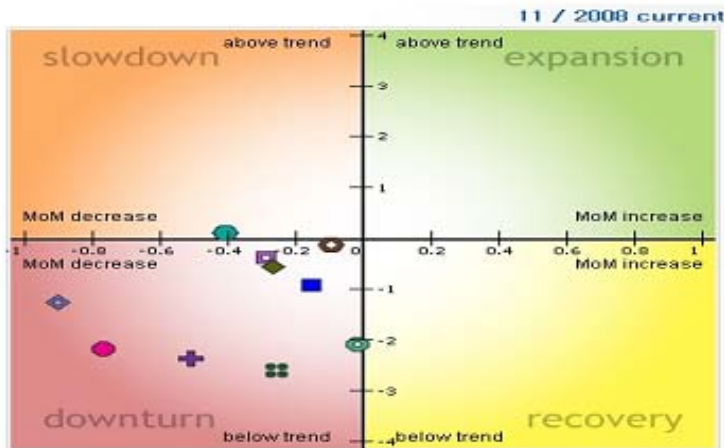
September 2008



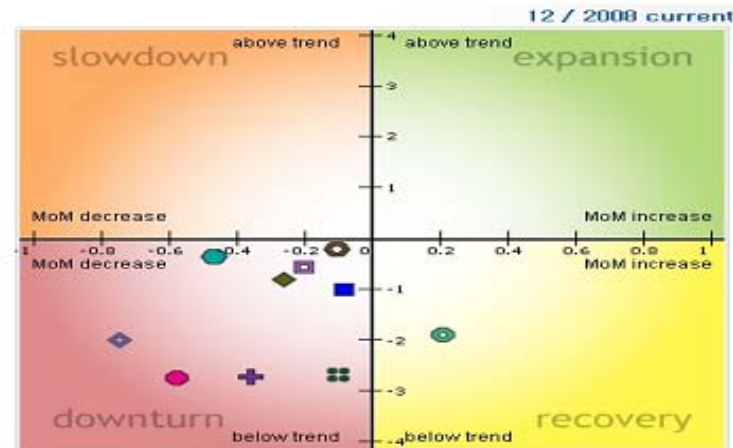
October 2008



November 2008



December 2008



IV. Example on the utilization of BCC



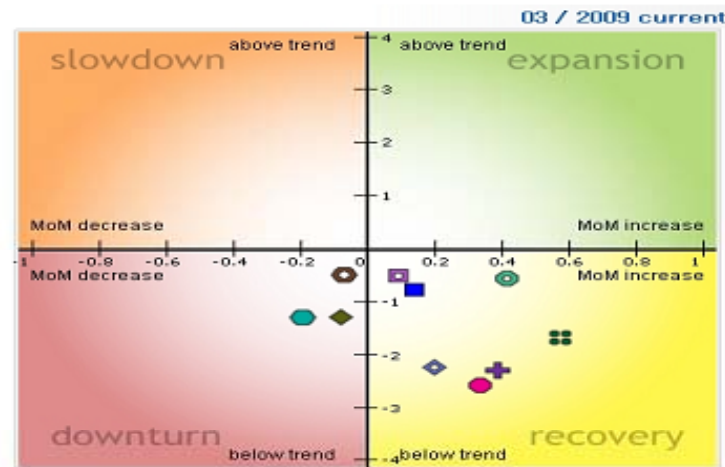
- The movement after Global Financial Crisis in the first half of 2009 year is represented in the Business Cycle Clock as key indicators were passing a trough
- Indicator such as the CSI already began to expand



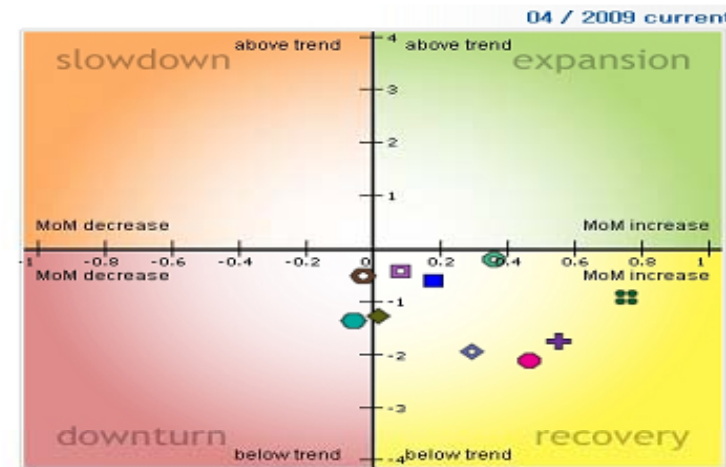
IV. Example on the utilization of BCC



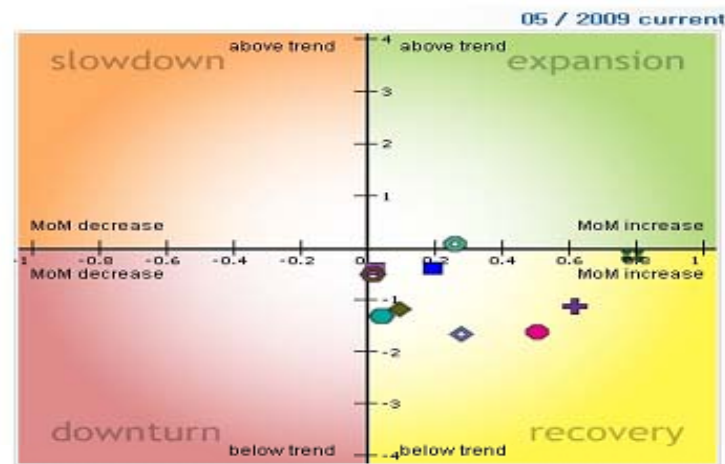
March 2009



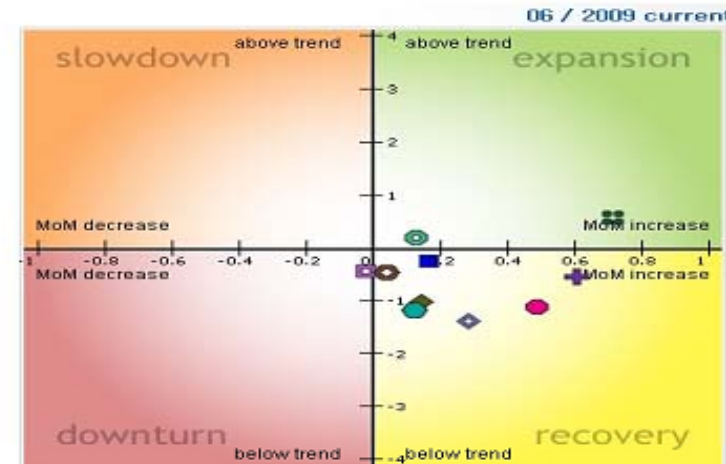
April 2009



May 2009



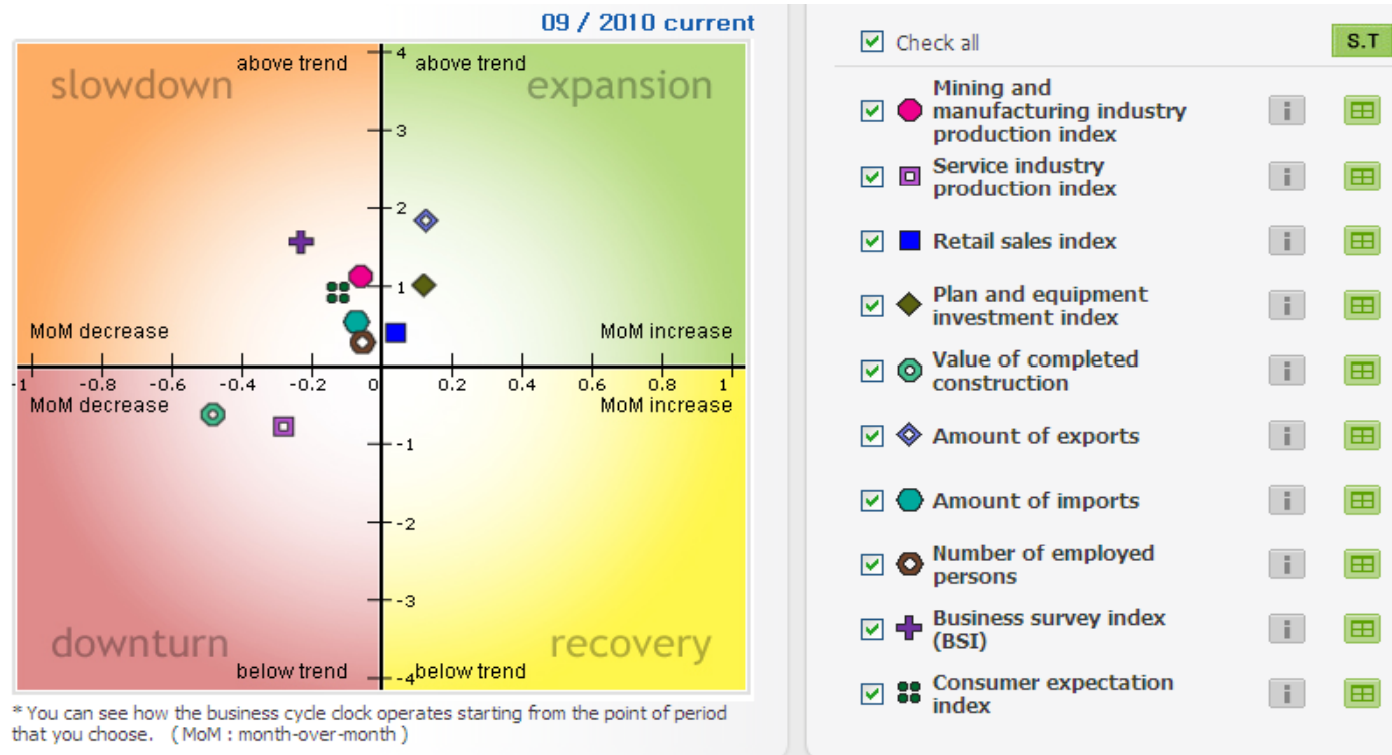
June 2009



IV. Example on the utilization of BCC

2. Analysis of Sep. 2010 using Business Cycle Clock

- The most of main indicators in Korea are located in the orange quadrant



IV. Example on the utilization of BCC

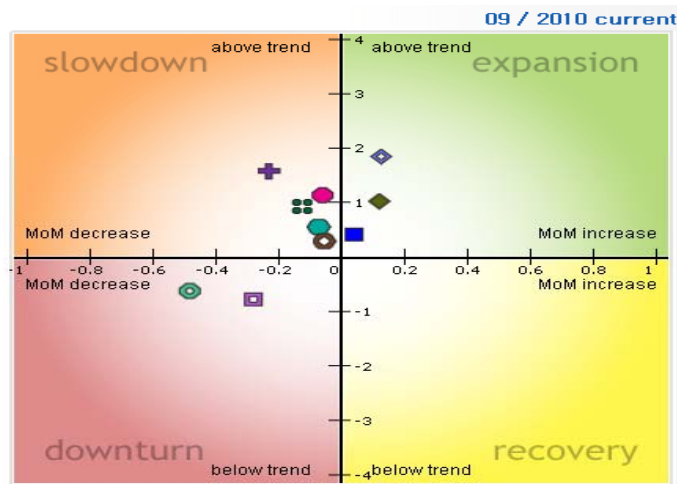


3. Developing the track function

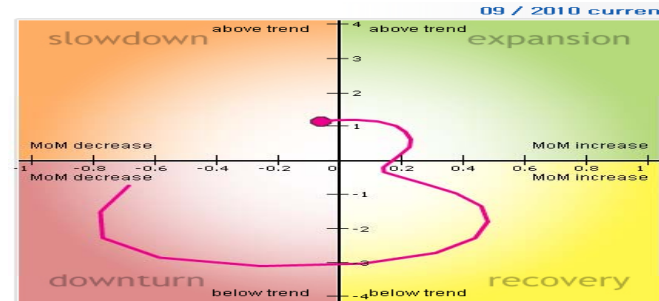
- A better view on how series are reacting during a cycle and how long cycles last



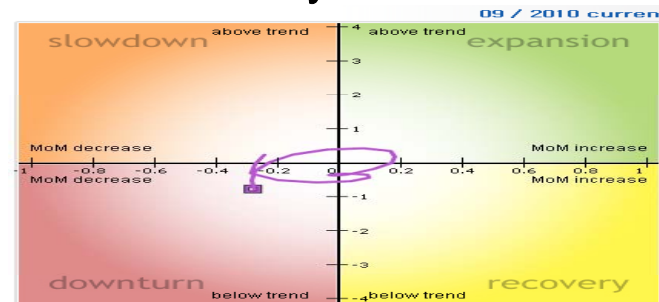
IV. Example on the utilization of BCC



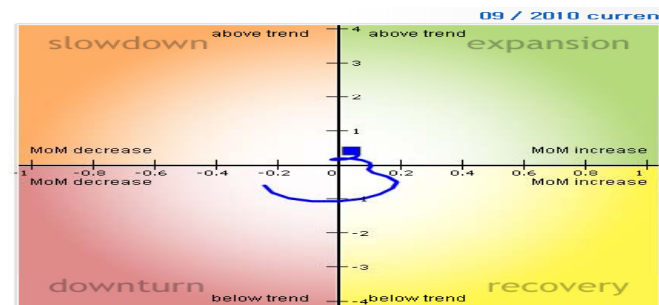
Industrial Production Index



Service Industry Production Index



Retail Sales Index



V. Unique features of BCC

- The picture in time of the previous reference date of an economy is available on the Business Cycle Clock
- ❖ The Reference Dates of Business Cycle
 - Represent most important turning points on expansion and contraction in the aggregate economic activity of a nation.
 - Useful for historical analysis of business cycle



V. Unique features of BCC



- Used to assess the economic policies and co-movement of economic indicators
- Used for testing the business cycle behavior and studying the characteristics of economic movements



V. Unique features of BCC

< The Reference Dates of Business Cycle of Korea >

Cycle	Reference Date			Duration (Month)		
	Trough	Peak	Trough	Expansion	Contraction	Total
1st	1972. 3	1974. 2	1975. 6	23	16	39
2nd	1975. 6	1979. 2	1980. 9	44	19	63
3rd	1980. 9	1984. 2	1985. 9	41	19	60
4th	1985. 9	1988. 1	1989. 7	28	18	46
5th	1989. 7	1992. 1	1993. 1	30	12	42
6th	1993. 1	1996. 3	1998. 8	38	29	67
7th	1998. 8	2000. 8	2001. 7	24	11	35
8th	2001. 7	2002.12	2005. 4	17	28	45
9th	2005. 4	2008. 1	2009. 2	33	13	46
10th	2009. 2					
Average	-	-	-	31	18	49



V. Unique features of BCC

- Statistics Korea provides the Composite Economic Index as well as Business Cycle Clock
 - The composite leading, coincident, and lagging indexes are announced monthly
 - Also, the cyclical component of the composite coincident index and the 12 month smoothed change in the Composite Leading Index are released

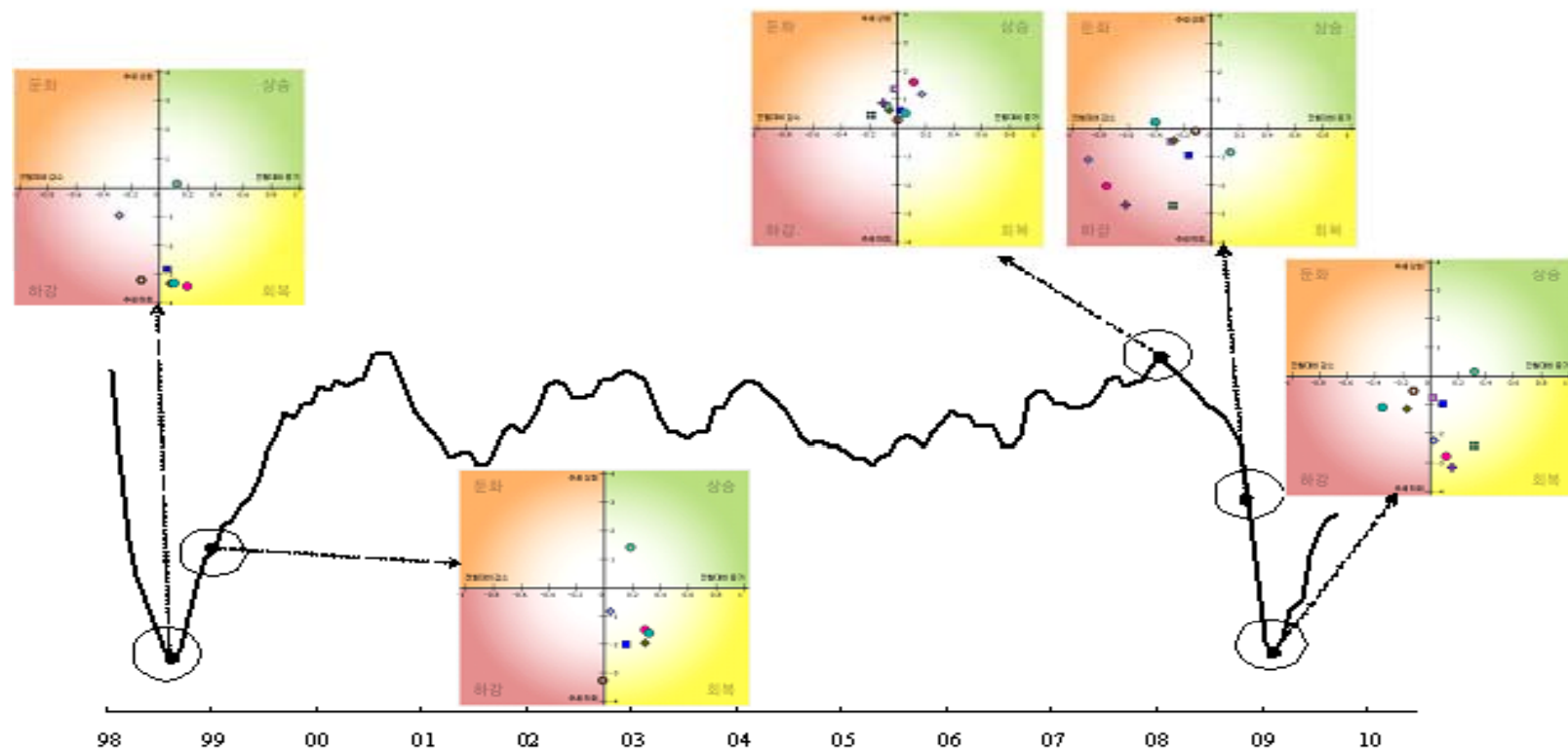


V. Unique features of BCC

- The leading and coincident diffusion indexes are compiled internally and they are used to check economic conditions and identify turning points complementarily.

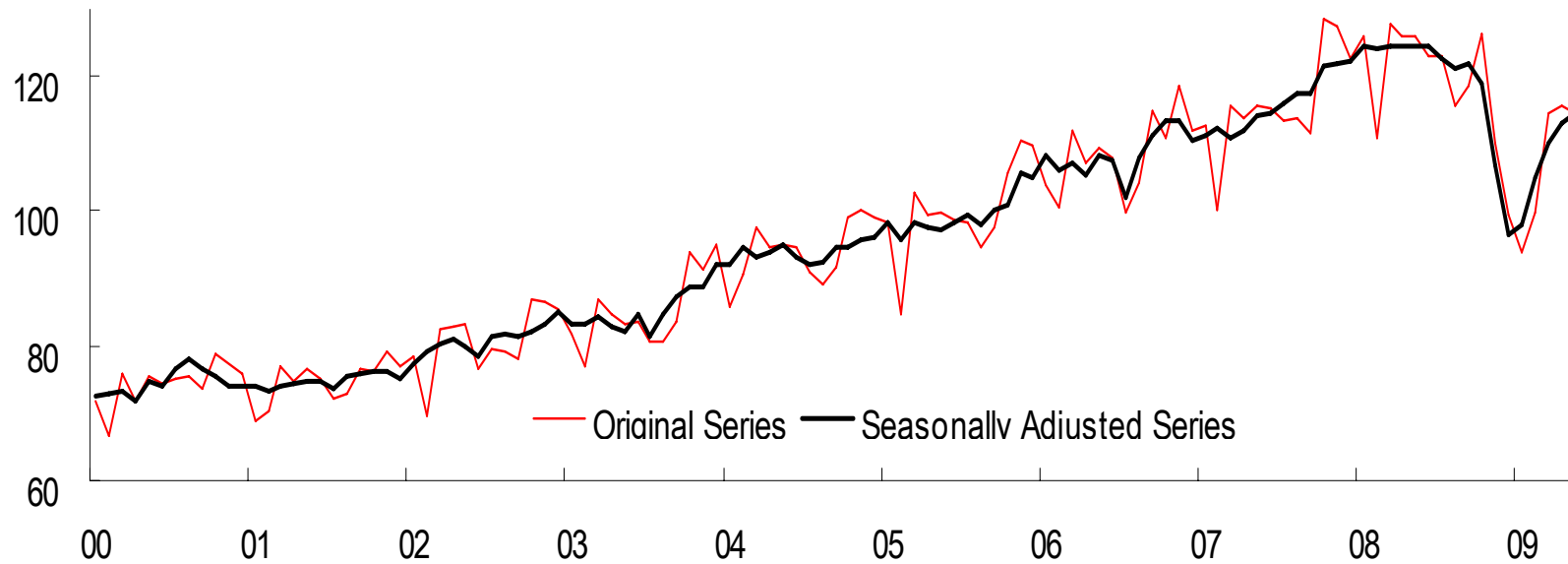


< Appendix1 > Relation between CEI and BCC



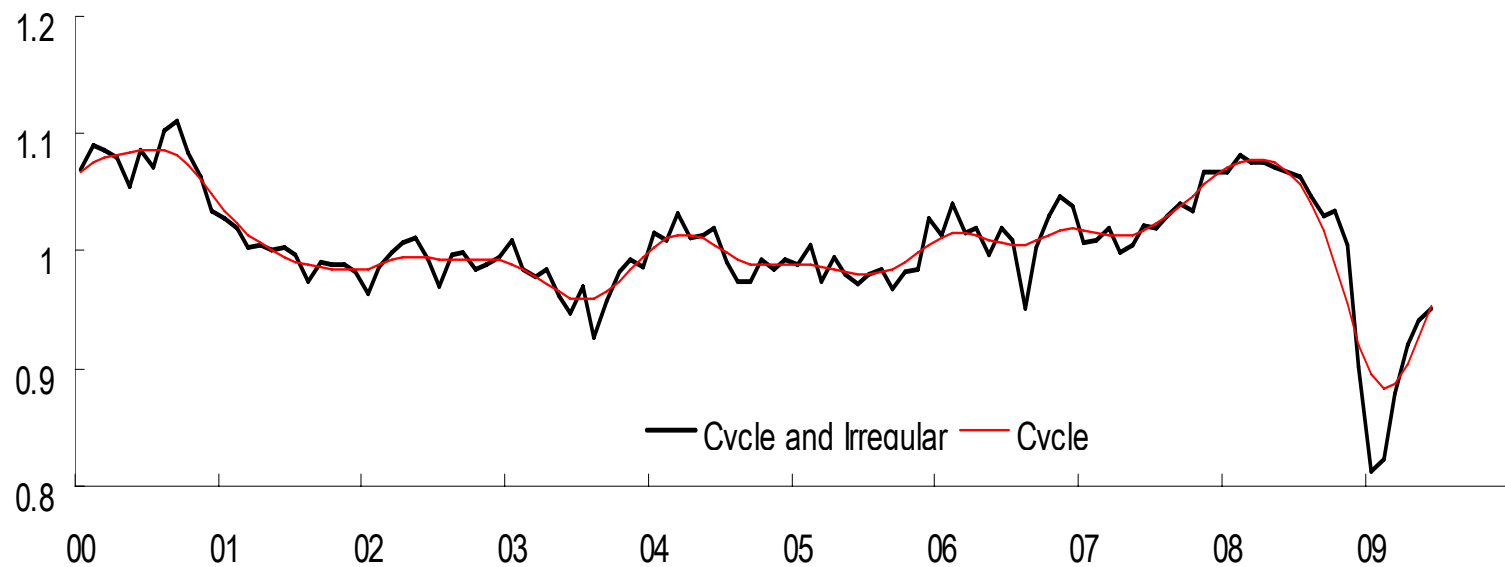
< Appendix2 > Procedure to compute cycle

1. Compute the seasonally adjusted series using the Census X12 program to filter out seasonal fluctuations.



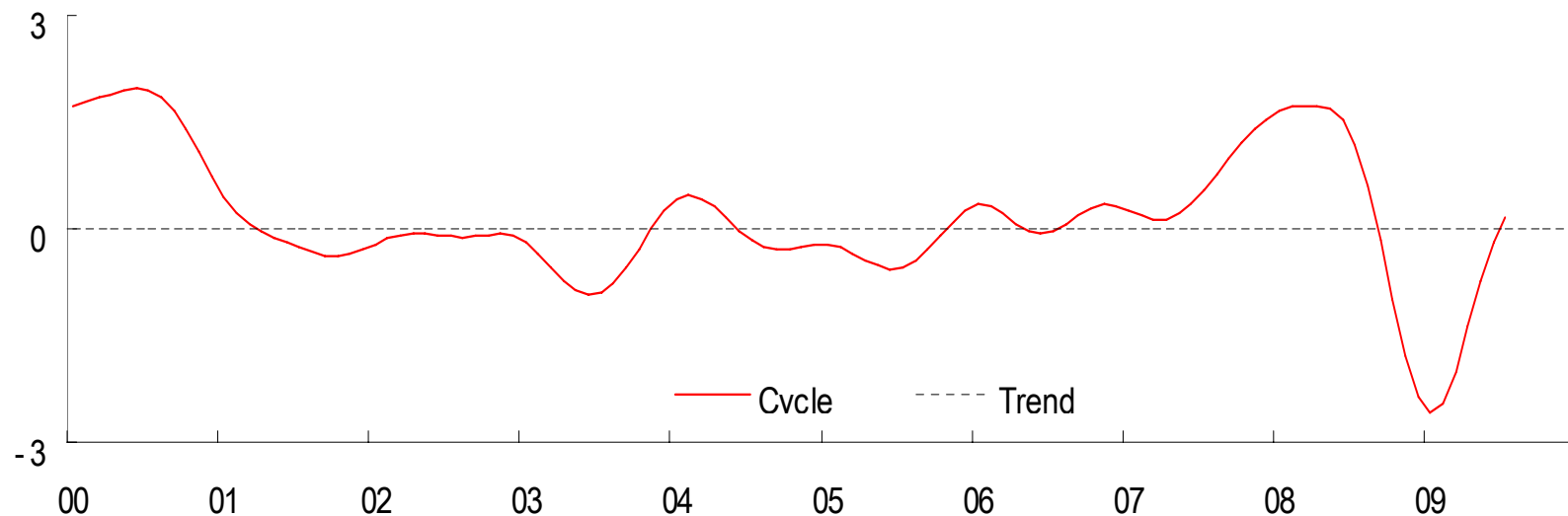
Procedure to compute cycle

2. Compute cycle applying HP(the Hodrick-Prescott) filter. The HP filter is applied twice to achieve a smoothed de-trended cycle.



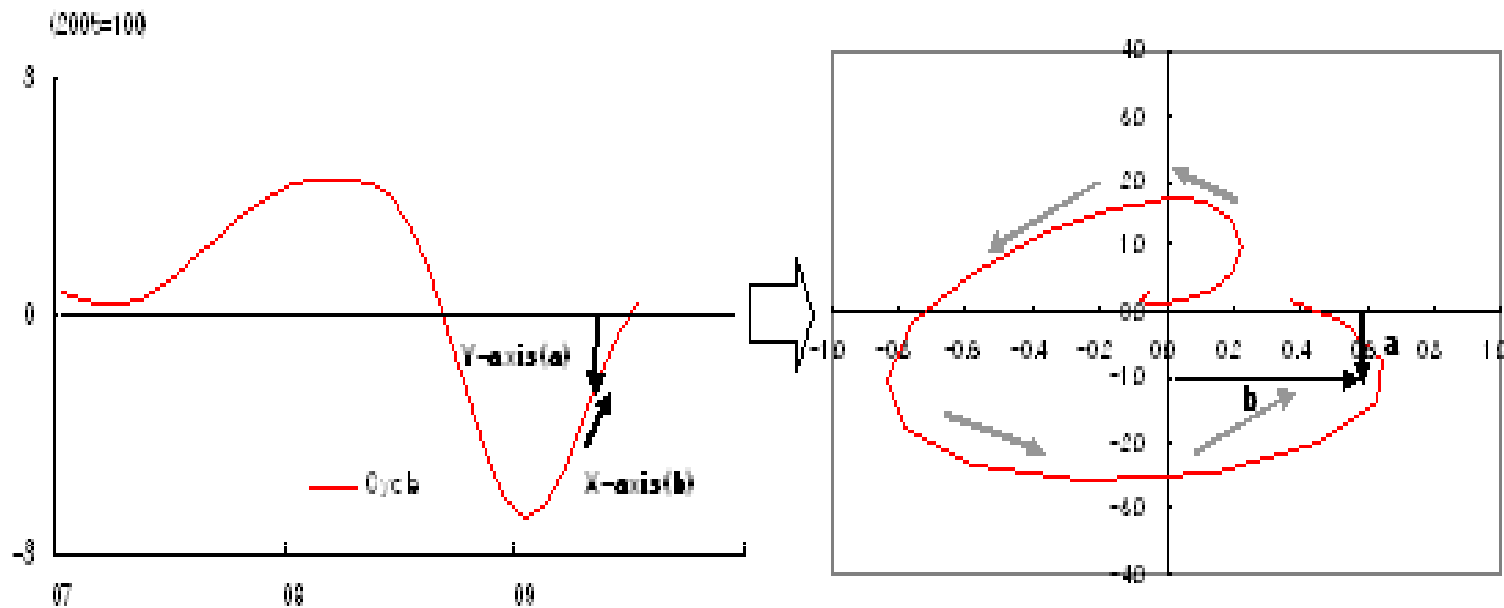
Procedure to compute cycle

3. Compute cycle and standardise by subtracting the mean and dividing by the standard deviation.
 - This step is necessary to compare the cycle of the separate indicators in the BCC.



Procedure to compute cycle

4. Compute the coordinates of each indicator in the Business Cycle Clock by taking the deviation from trend (=the cycle) as the y-coordinate and the period-on-period change in the cycle as x-coordinate.





Thank you for listening my presentation.

❖ Statistics KOREA : <http://www.kostat.go.kr>

