



# PENUNJUK EKONOMI MALAYSIA

INDEKS PELOPOR, SERENTAK & SUSULAN

## MALAYSIA ECONOMIC INDICATORS

LEADING, COINCIDENT & LAGGING INDICES



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**JABATAN PERANGKAAN MALAYSIA**  
*DEPARTMENT OF STATISTICS, MALAYSIA*

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**INDEKS PELOPOR, SERENTAK & SUSULAN**

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## ***MALAYSIA ECONOMIC INDICATORS***

***LEADING, COINCIDENT & LAGGING INDICES***

# **2008**

**NOVEMBER**

*NOVEMBER*

**JABATAN PERANGKAAN MALAYSIA**  
*DEPARTMENT OF STATISTICS, MALAYSIA*

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# INDEKS PELOPOR, SERENTAK DAN SUSULAN

## LEADING, COINCIDENT AND LAGGING INDICES

**NOVEMBER 2008**  
**NOVEMBER 2008**

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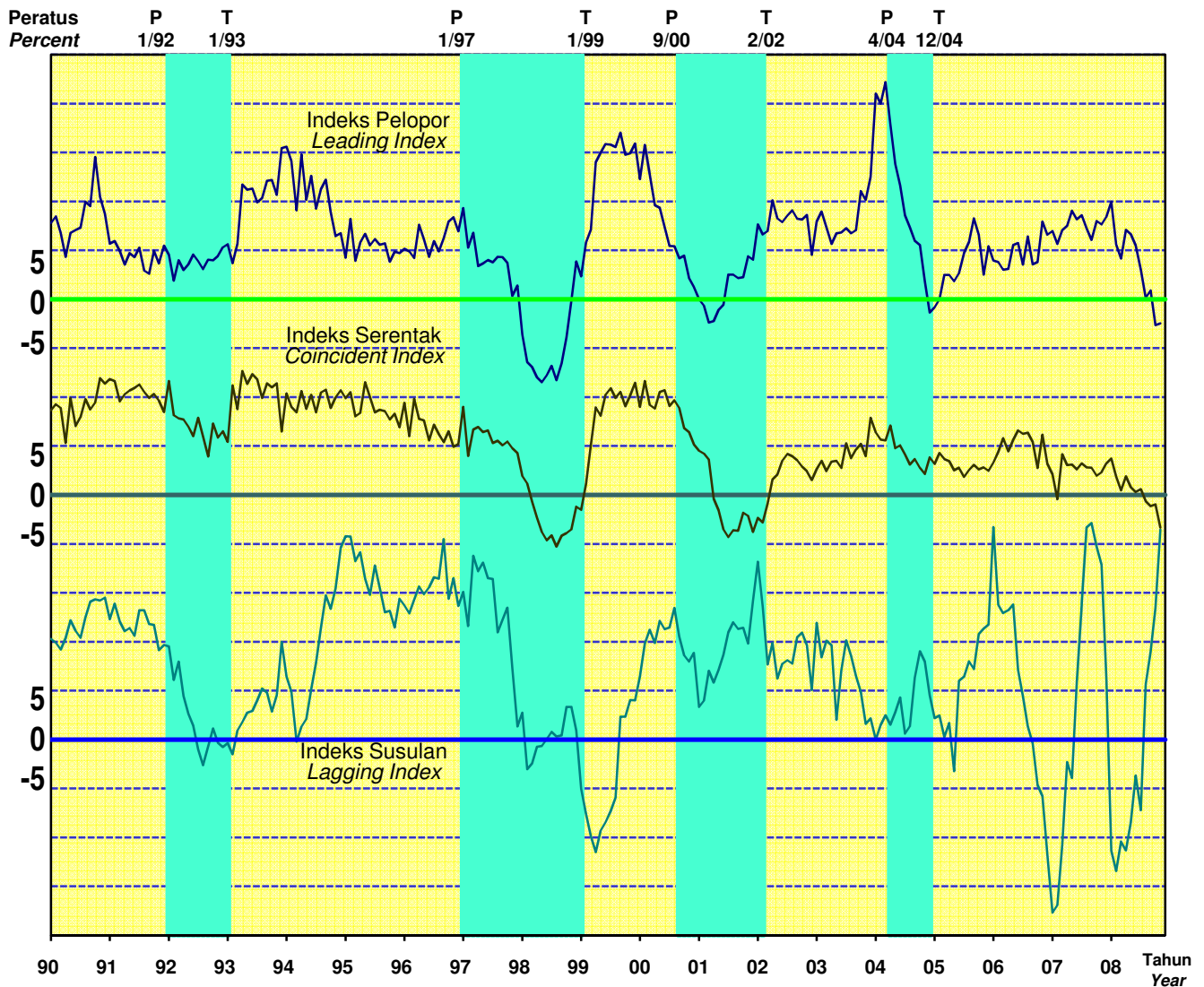
Indeks Serentak (IS) merekodkan penurunan 1.3% daripada 122.7 mata dalam bulan Oktober 2008 kepada 121.2 mata dalam bulan November 2008. Kadar pertumbuhan enam bulan terlicin IS dalam bulan semasa berterusan menurun kepada -3.3% daripada -1.0% dalam bulan Oktober 2008. Empat daripada enam komponen IS mencatatkan penurunan iaitu, nilai caruman benar KWSP (-0.9%), Indeks Pengeluaran Perindustrian (-0.4%), import kasar benar (-0.4%) dan jumlah guna tenaga dalam sektor pembuatan (-0.3%). Sementara itu, dua komponen lain merekodkan peratus perubahan positif. Indeks Pelopor (IP) yang memantau prestasi ekonomi ke hadapan juga menyusut kepada -2.5% dalam bulan November 2008 berbanding -2.7% dalam bulan Oktober 2008.

Prestasi kedua-dua indeks dalam bulan semasa menunjukkan bahawa ekonomi Malaysia dijangka mengekalkan pertumbuhan perlahan untuk bulan-bulan ke hadapan.

The Coincident Index (CI) recorded a decline of 1.3% from 122.7 points in October 2008 to 121.2 points in November 2008. The six-month smoothed growth rate of CI in the current month dropped further to -3.3% from -1.0% in October 2008. Four out of the six components of CI posted a decline were namely, real contributions in EPF (-0.9%), Index of Industrial Production (-0.4%), real gross imports (-0.4%) and total employment in manufacturing sector (-0.3%). Meanwhile, the other two components registered positive percentage change. The Leading Index (LI) which monitors the economic performance in advance also dropped to -2.5% in November 2008 as compared to -2.7% in October 2008.

The performance of both indices in the current month indicates that the Malaysian economy is expected to sustain its slow growth in the months ahead.

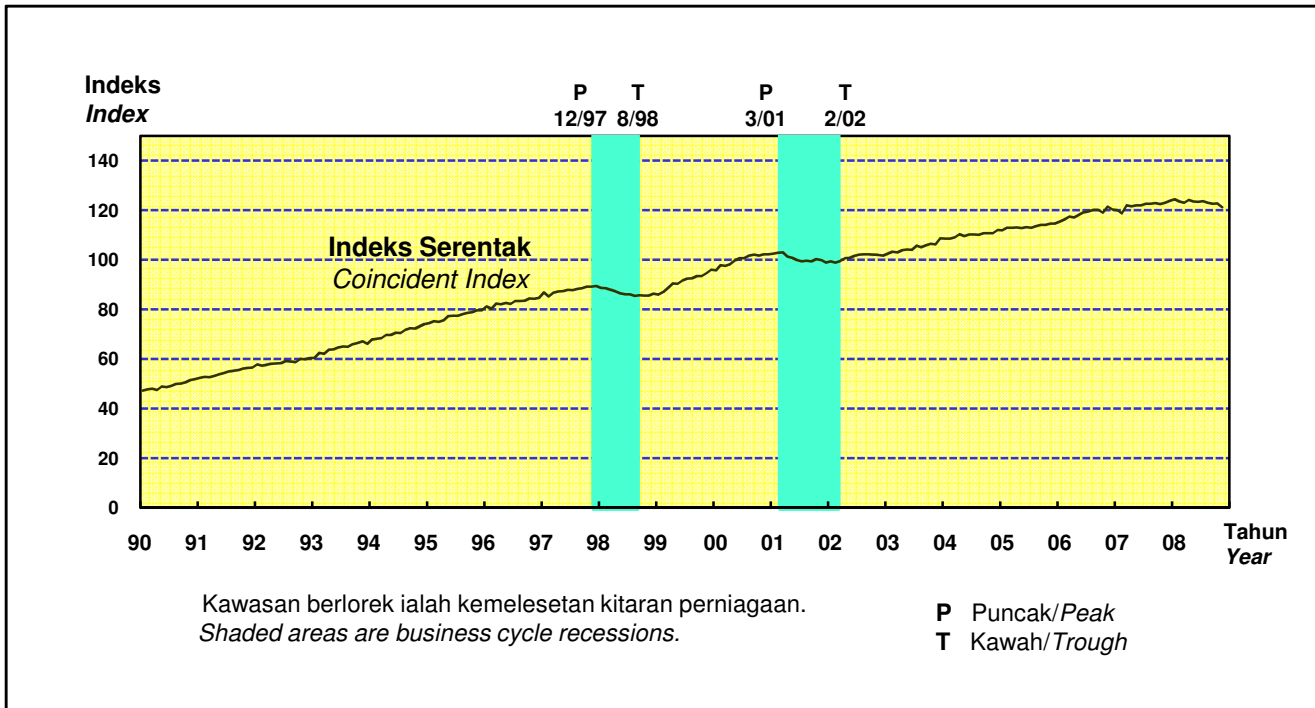
**Carta 1 : Kadar Pertumbuhan Enam-Bulan Terlicin bagi Indeks Pelopor, Serentak dan Susulan, 1990-2008**  
**Chart 1 : Six-Month Smoothed Growth Rates of the Leading, Coincident and Lagging Indices, 1990-2008**



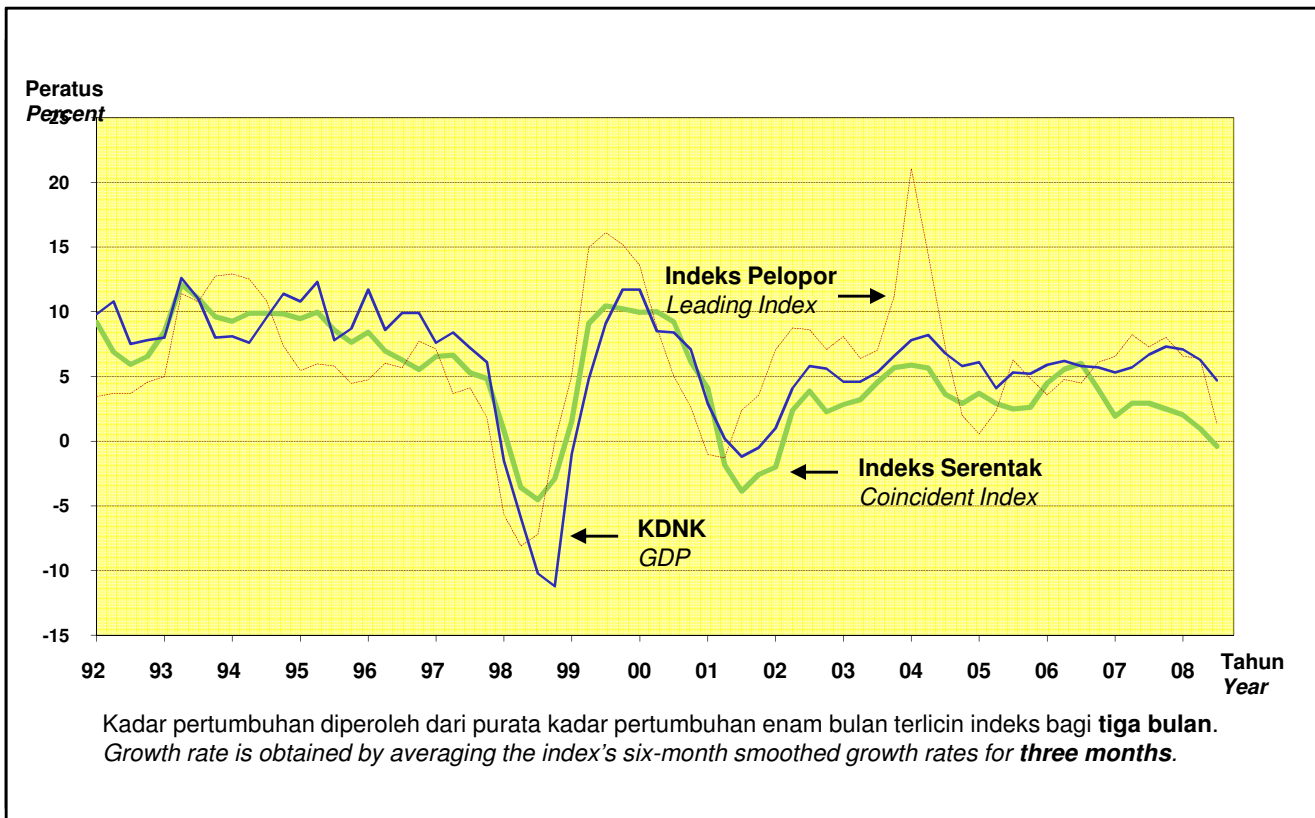
Kawasan berlorek ialah kemelesetan kitaran pertumbuhan. Kadar pertumbuhan dinyatakan sebagai kadar tahunan terkompoun berasaskan nisbah indeks bulan semasa kepada purata dua belas bulan terdahulu.

*Shaded areas are growth cycle recessions. The growth rates are expressed as compound annual rates based on the ratio of the current month's index to its average level during the preceding twelve months.*

**Carta 2 : Indeks Serentak dan Kitaran Perniagaan Malaysia, 1990-2008**  
**Chart 2 : The Coincident Index and Malaysia Business Cycle Turns, 1990-2008**



**Carta 3 : Kadar Pertumbuhan Indeks Serentak, Indeks Pelopor dan Keluaran Dalam Negeri Kasar, 1992-2008**  
**Chart 3 : Growth Rates of Coincident Index, Leading Index and Gross Domestic Product, 1992-2008**



**Jadual 1 : Sumbangan Setiap Komponen terhadap Peratus Perubahan Indeks daripada Bulan Sebelumnya**  
**Table 1 : The Contribution of Each Component to the Percent Change in the Index from the Previous Month**

<b>Komponen Indeks Serentak</b> <b><i>Coincident Index Components</i></b>	<b>September 2008</b> <b><i>September 2008</i></b>	<b>Oktober 2008</b> <b><i>October 2008</i></b>	<b>November 2008</b> <b><i>November 2008</i></b>
1. Indeks Pengeluaran Perindustrian <i>Index of Industrial Production</i>	-0.3	-0.2	-0.4
2. Import Kasar Benar <i>Real Gross Imports</i>	-0.1	-0.3	-0.4
3. Gaji & Upah Benar, Pembuatan <i>Real Salaries &amp; Wages, Manufacturing</i>	-0.2	-0.3	0.3
4. Jumlah Guna tenaga, Pembuatan <i>Total Employment, Manufacturing</i>	0.3	0.1	-0.3
5. Nilai Jualan Benar, Pembuatan <i>Real Sales, Manufacturing</i>	-0.2	-0.4	0.3
6. Nilai Caruman Benar, KWSP <i>Real Contributions, EPF</i>	0.1	1.1	-0.9
Faktor Penyelarasan Arah Aliran <i>Trend Adjustment Factor</i>	0.1	0.1	0.1
<b>Peratus Perubahan</b> <b><i>Percentage Change</i></b>	<b>-0.3</b>	<b>0.1</b>	<b>-1.3</b>
<b>Komponen Indeks Pelopor</b> <b><i>Leading Index Components</i></b>	<b>September 2008</b> <b><i>September 2008</i></b>	<b>Oktober 2008</b> <b><i>October 2008</i></b>	<b>November 2008</b> <b><i>November 2008</i></b>
1. Penawaran Wang Benar, M1 <i>Real Money Supply, M1</i>	0.8	-0.6	0.7
2. Indeks Perusahaan Bursa Malaysia <i>Bursa Malaysia Industrial Index</i>	-0.1	-0.3	-0.2
3. Jumlah Dagangan Benar : Lapan Negara Utama <i>Real Total Trade : Eight Major Trading Partners</i>	-0.1	-0.2	0.2
4. IHP Perkhidmatan, Kadar Pertumbuhan (Songsang) <i>CPI for Services, Growth Rate (Inverted)</i>	-0.1	0.1	0.3
5. Indeks Harga Bahan Perindustrian, Kadar Pertumbuhan <i>Industrial Material Price Index, Growth Rate</i>	-0.1	0.3	0.4
6. Nisbah Harga terhadap Kos Seunit Buruh, Pembuatan <i>Ratio of Price to Unit Labour Cost, Manufacturing</i>	-0.2	-0.7	-0.8
7. Bilangan Unit Kediaman Diluluskan <i>Number of Housing Permits Approved</i>	0.8	-0.4	-0.6
8. Bilangan Syarikat Baru Didaftarkan <i>Number of New Companies Registered</i>	-0.4	0.1	0.1
Faktor Penyelarasan Arah Aliran <i>Trend Adjustment Factor</i>	0.1	0.1	0.1
<b>Peratus Perubahan</b> <b><i>Percentage Change</i></b>	<b>0.7</b>	<b>-1.6</b>	<b>0.2</b>
<b>Komponen Indeks Susulan</b> <b><i>Lagging Index Components</i></b>	<b>September 2008</b> <b><i>September 2008</i></b>	<b>Oktober 2008</b> <b><i>October 2008</i></b>	<b>November 2008</b> <b><i>November 2008</i></b>
1. Kadar Faedah Wang Panggilan 7-hari <i>7-day Call Money, Rate</i>	0.0	0.0	0.0
2. Lebihan Pinjaman Benar Sektor Swasta <i>Real Excess Lending to Private Sector</i>	-0.8	2.7	2.8
3. Bilangan Projek Pelaburan Baru Diluluskan <i>Number of Investment Projects Approved</i>	0.2	-0.4	0.3
4. Bilangan Majikan Gagal Mencarum KWSP (Songsang) <i>Number of Defaulters, EPF (Inverted)</i>	1.3	0.5	0.2
5. Bilangan Kenderaan Baru Didaftarkan <i>Number of New Vehicles Registered</i>	0.5	-1.0	0.2
Faktor Penyelarasan Arah Aliran <i>Trend Adjustment Factor</i>	0.1	0.1	0.1
<b>Peratus Perubahan</b> <b><i>Percentage Change</i></b>	<b>1.3</b>	<b>1.9</b>	<b>3.6</b>

**Jadual 2 : Indeks Serentak, Pelopor dan Susulan, dan Kadar Pertumbuhan, 1999 - 2008 (samb.)**  
**Table 2 : The Coincident, Leading and Lagging Indices, and Growth Rates, 1999 - 2008 (cont'd)**

Tempoh <i>Period</i>	Indeks Serentak <i>Coincident Index</i>		Indeks Pelopor <i>Leading Index</i>		Indeks Susulan <i>Lagging Index</i>		
	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	
1999	Jan.	85.9	-1.5	84.0	2.3	93.4	-5.0
	Feb.	86.9	1.1	85.4	5.8	91.8	-7.6
	Mac	88.6	5.1	86.1	7.1	90.4	-9.9
	April	90.4	8.9	89.3	14.0	89.2	-11.5
	Mei	90.3	8.1	90.3	15.0	89.9	-9.3
	Jun	91.6	10.2	91.4	15.8	89.9	-8.4
	Julai	92.4	10.9	92.2	15.8	90.0	-7.3
	Ogos	92.5	9.9	93.0	15.6	90.2	-5.9
	Sept.	93.4	10.5	94.7	17.0	93.9	2.3
	Okt.	93.4	9.1	94.9	14.8	93.7	2.3
	Nov.	94.6	10.2	96.1	14.9	94.2	4.0
	Dis.	96.0	11.5	97.7	15.9	93.9	4.0
2000	Jan.	95.7	9.0	97.2	12.3	94.9	6.5
	Feb.	97.8	11.6	100.0	15.8	96.6	9.8
	Mac	97.6	9.2	99.9	12.8	97.7	11.2
	April	98.2	8.8	99.5	9.6	97.7	9.9
	Mei	99.7	10.5	100.3	9.3	99.5	12.1
	Jun	100.6	10.7	100.2	7.4	100.0	11.3
	Julai	100.6	9.1	100.0	5.5	101.0	11.5
	Ogos	101.6	9.7	100.6	5.4	102.9	13.5
	Sept.	102.0	8.9	100.6	4.2	102.6	10.5
	Okt.	101.7	6.8	101.3	4.4	102.4	8.6
	Nov.	102.2	6.4	100.6	2.2	102.8	8.0
	Dis.	102.2	5.1	100.5	1.3	104.0	8.9
2001	Jan.	102.4	4.5	100.0	0.0	102.0	3.3
	Feb.	102.9	4.2	99.9	-0.7	102.9	4.0
	Mac	103.0	3.6	99.0	-2.4	105.1	7.0
	April	101.2	-0.4	99.0	-2.2	105.1	5.8
	Mei	100.8	-1.6	99.6	-1.1	106.4	7.1
	Jun	99.8	-3.5	99.8	-0.6	107.8	8.7
	Julai	99.3	-4.3	101.4	2.5	109.8	11.0
	Ogos	99.6	-3.6	101.6	2.5	111.1	12.0
	Sep.	99.4	-3.7	101.4	2.1	111.4	11.3
	Okt.	100.2	-1.8	101.6	2.2	112.3	11.4
	Nov.	99.9	-2.1	102.7	4.4	112.3	9.8
	Dis.	98.8	-3.8	102.7	4.0	115.5	14.2

**Jadual 2 : Indeks Serentak, Pelopor dan Susulan, dan Kadar Pertumbuhan, 1999 - 2008 (samb.)**  
**Table 2 : The Coincident, Leading and Lagging Indices, and Growth Rates, 1999 - 2008 (cont'd)**

Tempoh <i>Period</i>	Indeks Serentak <i>Coincident Index</i>		Indeks Pelopor <i>Leading Index</i>		Indeks Susulan <i>Lagging Index</i>	
	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>
2002 Jan. Feb. Mac April Mei Jun Julai Ogos Sept. Okt. Nov. Dis.	99.3	-2.3	104.8	7.6	118.7	18.2
	98.8	-2.8	104.7	6.6	117.7	13.6
	99.5	-0.9	105.3	7.0	115.7	7.7
	100.6	1.6	107.5	10.1	117.8	9.9
	100.8	2.1	107.3	8.3	116.8	6.2
	101.5	3.5	107.8	7.9	118.6	7.7
	102.1	4.2	108.8	8.6	119.8	8.1
	102.2	3.9	109.7	9.1	120.4	7.8
	102.2	3.5	110.0	8.2	122.9	10.5
	102.1	2.9	110.7	8.1	124.2	10.9
	102.0	2.4	111.7	8.6	124.4	9.6
	101.6	1.5	110.2	4.5	122.6	5.1
2003 Jan. Feb. Mac April Mei Jun Julai Ogos Sept. Okt. Nov. Dis.	102.5	2.6	112.8	7.9	127.5	11.9
	103.2	3.5	114.1	9.0	126.1	8.4
	103.0	2.4	113.9	7.3	127.9	10.1
	103.8	3.4	113.7	5.6	128.7	9.6
	104.2	3.5	114.9	6.7	124.7	2.0
	104.1	2.8	115.6	6.8	128.7	7.1
	105.6	5.3	116.5	7.3	131.5	10.1
	105.1	3.7	116.9	6.7	131.5	8.6
	105.8	4.6	117.7	7.1	131.1	6.5
	106.5	5.2	120.7	11.1	130.7	4.9
	106.2	3.9	121.1	10.2	129.1	1.6
	108.7	7.9	123.3	12.5	129.8	2.2
2004 Jan. Feb. Mac April Mei Jun Julai Ogos Sept. Okt. Nov. Dis.	108.5	6.4	129.5	21.0	128.9	0.0
	108.6	5.7	130.4	20.0	130.1	1.5
	109.0	5.6	133.2	22.2	131.1	2.5
	110.4	7.1	132.4	17.9	130.7	1.5
	109.6	4.8	131.6	13.8	131.8	2.8
	110.2	5.1	131.7	11.6	133.4	4.3
	110.2	4.1	131.1	8.6	131.3	0.6
	110.0	3.1	131.6	7.3	131.8	1.4
	110.8	3.7	131.9	6.0	135.3	6.3
	110.7	2.8	132.9	5.5	137.4	9.0
	110.7	2.1	131.3	1.8	137.3	8.0
	112.0	3.8	129.9	-1.4	135.6	4.5



**Jadual 2 : Indeks Serentak, Pelopor dan Susulan, dan Kadar Pertumbuhan, 1999 - 2008 (samb.)**  
**Table 2 : The Coincident, Leading and Lagging Indices, and Growth Rates, 1999 - 2008 (cont'd)**

Tempoh <i>Period</i>	Indeks Serentak <i>Coincident Index</i>		Indeks Pelopor <i>Leading Index</i>		Indeks Susulan <i>Lagging Index</i>		
	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	
2005	Jan.	111.9	3.2	130.9	-0.8	134.5	2.2
	Feb.	112.9	4.3	131.6	0.0	135.1	2.5
	Mac	112.9	3.7	133.4	2.5	134.0	0.3
	April	113.1	3.5	133.4	2.5	135.3	1.7
	Mei	112.8	2.5	133.1	1.8	132.0	-3.2
	Jun	113.2	2.8	133.8	2.7	138.7	6.0
	Julai	112.9	1.8	135.4	4.7	139.5	6.5
	Ogos	113.5	2.5	136.6	5.9	141.3	8.0
	Sept.	114.1	3.1	138.7	8.3	141.6	7.2
	Okt.	114.1	2.6	138.1	6.6	144.7	10.8
	Nov.	114.5	2.8	135.7	2.5	145.7	11.3
	Dis.	114.7	2.5	138.1	5.4	146.7	11.7
2006	Jan.	115.4	3.3	137.8	3.9	154.7	21.7
	Feb.	116.3	4.4	138.2	3.8	151.0	13.8
	Mac	117.5	5.8	138.2	3.0	151.8	12.9
	April	117.1	4.4	138.7	3.1	153.6	13.2
	Mei	118.1	5.6	140.9	5.5	155.6	13.8
	Jun	119.2	6.6	141.7	5.7	152.7	7.1
	Julai	119.5	6.3	140.8	3.5	151.8	4.4
	Ogos	120.1	6.4	143.4	6.4	150.3	1.3
	Sept.	120.1	5.4	141.8	3.6	149.7	-0.4
	Okt.	119.0	2.8	142.3	3.8	146.9	-4.6
	Nov.	121.5	6.1	145.7	7.9	146.1	-5.8
	Dis.	120.2	3.2	145.6	6.6	141.1	-11.7
2007	Jan.	120.0	2.1	146.5	7.0	135.4	-17.7
	Feb.	118.7	-0.5	146.3	5.6	134.6	-16.9
	Mac	121.9	4.1	148.0	7.1	138.6	-10.8
	April	121.6	3.1	149.2	7.5	144.5	-2.3
	Mei	122.0	3.1	151.3	9.1	142.5	-3.9
	Jun	122.0	2.6	151.5	8.2	149.2	6.1
	Julai	122.6	3.2	152.7	8.6	154.7	13.9
	Ogos	122.6	2.8	152.7	7.2	160.7	21.7
	Sept.	122.8	2.8	152.6	6.1	161.9	22.1
	Okt.	122.5	2.0	155.0	8.0	161.3	19.7
	Nov.	123.0	2.3	155.9	7.6	161.3	17.9
	Dis.	123.8	3.2	157.4	8.4	153.7	6.1

**Jadual 2 : Indeks Serentak, Pelopor dan Susulan, dan Kadar Pertumbuhan, 1999 - 2008 (samb.)**  
**Table 2 : The Coincident, Leading and Lagging Indices, and Growth Rates, 1999 - 2008 (cont'd)**

Tempoh <i>Period</i>	Indeks Serentak <i>Coincident Index</i>		Indeks Pelopor <i>Leading Index</i>		Indeks Susulan <i>Lagging Index</i>	
	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>	2000=100	Kadar Pertumbuhan <i>Growth Rates</i>
2008 Jan.	124.4	3.7	159.6	10.0	140.4	-11.3
Feb.	123.6	1.9	157.3	5.6	139.0	-13.4
Mac	123.0	0.5	157.0	4.2	142.0	-10.4
April	124.1	1.9	160.2	7.1	141.4	-11.3
Mei	123.6	0.8	160.8	6.6	143.6	-8.4
Jun	123.4	0.3	160.6	5.5	147.8	-3.7
Julai	123.7	0.6	159.4	3.0	144.7	-7.2
Ogos	122.9	-0.6	157.5	0.1	154.3	5.6
Sept.	122.6	-1.2	158.5	0.9	156.4	9.0
Okt.	122.7	-1.0	156.0	-2.7	159.4	13.5
Nov.	121.2	-3.3	156.2	-2.5	165.2	21.5

- Nota : (a) Semakan terhadap indeks biasanya adalah hasil daripada semakan terhadap punca data.  
*Note : Revisions to the indices are normally the results of revision to source data.*
- (b) Semua perubahan merujuk kepada data nyah musim kecuali jika dinyatakan.  
*All references refer to seasonally adjusted data unless otherwise stated.*
- (c) Kadar pertumbuhan dinyatakan sebagai kadar tahunan terkompoun berasaskan kepada nisbah indeks bulan semasa terhadap purata indeks 12 bulan terdahulu.  
*Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.*

## **Konsep dan Ukuran Asas**

### **Pengenalan**

Ekonomi perindustrian adalah sensitif kepada kitaran; apabila sesuatu ekonomi perindustrian berkembang, pekerjaan, jualan, harga dan keuntungan meningkat. Sebaliknya apabila berlaku penguncupan ekonomi, kejatuhan yang ketara ditunjukkan dalam komponen-komponen tersebut. Fenomena ini juga dialami oleh Malaysia yang mempunyai sektor perindustrian yang besar dan berkembang. Maklumat berhubung dengan sesuatu perubahan adalah penting untuk memantau dan meramal prestasi kitaran ekonomi Malaysia.

Dalam hal ini, Jabatan Perangkaan Malaysia dengan kerjasama *Center for International Business Cycle Research (CIBCR), Columbia University, New York, U.S.A.*, telah membangunkan indeks pelopor, serentak dan susulan yang boleh digunakan sebagai penunjuk kepada

## ***Basic Concepts and Measures***

### **Introduction**

Industrial economies are cyclically sensitive; when an industrial economy expands, employment, sales, prices, and profits rise and when the economy contracts, downturns in economic performance are often significant. This phenomenon is also experienced by Malaysia which has a large and growing industrial sector. Information pertaining to such movements is thus essential to track and forecast the cyclical performance of the Malaysian economy.

In this connection, the Department of Statistics Malaysia in cooperation with the Center for International Business Cycle Research (CIBCR) at Columbia University, New York, U.S.A., has developed the leading, coincident and lagging indices which will serve as

sesuatu perubahan. Seksyen yang berikutnya menjelaskan secara ringkas konsep teknikal asas bagi indeks-indeks tersebut.

### **Kitaran Perniagaan**

Definisi yang diterima umum mengenai kitaran perniagaan telah diasaskan oleh Arthur F. Burns dan Wesley C. Mitchell kira-kira 60 tahun yang lalu.

Mereka menulis<sup>1</sup>: "*Kitaran Perniagaan ialah satu bentuk turun naik yang terdapat dalam aktiviti ekonomi agregat bagi negara yang merancang ekonomi mereka terutamanya dalam enterprise perniagaan: satu kitaran mengandungi pengembangan yang berlaku serentak dalam kebanyakan aktiviti ekonomi, diikuti dengan kemelesetan, penguncupan dan pemulihan secara umum di mana ia membentuk fasa pengembangan pada kitaran yang berikutnya; jujukan perubahan ini*

indicators to such movements. The following sections briefly sketch the basic technical concepts of these indices.

### **Business Cycles**

*The most widely accepted definition of the business cycle was constructed by Arthur F. Burns and Wesley C. Mitchell about 60 years ago.*

*They wrote<sup>1</sup>: "Business Cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration, business cycles vary from*

*berulang tetapi tidak berkala; tempoh sesuatu kitaran perniagaan berbeza daripada lebih setahun kepada sehingga sepuluh atau dua puluh tahun ...".*

Kitaran perniagaan dipengaruhi oleh kitaran turun naik bagi kebanyakan aktiviti ekonomi atau proses, dan aktiviti ekonomi atau proses ini boleh mempunyai tempoh perhubungan yang amat berbeza terhadap kitaran perniagaan.

Sebilangan besar aktiviti ekonomi ini dapat diukur oleh siri masa ekonomi. Bagi sesetengah siri, tarikh titik pusing kitaran mungkin berbeza sedikit sahaja daripada titik pusing aktiviti perniagaan keseluruhan; bagi aktiviti yang lain, pusingan kitaran mungkin berlaku secara sistematik lebih awal atau terkemudian terhadap aktiviti perniagaan secara umum; manakala ada juga yang mungkin tidak mempunyai hubungan yang tetap.

*more than one year up to ten to twenty years ...".*

*The business cycle is influenced by cyclical fluctuations in many economic activities or processes, and these economic activities or processes can have widely differing temporal relationships to the business cycle.*

*A large number of these economic activities can be measured by economic time series. For some of these series, the dates of their cyclical turning points may differ only slightly from turning points in general business activities; for others, the cyclical turns may systematically lead or lag general business activities; for still others, there may be no regular relationship at all.*

### **Kitaran Pertumbuhan**

Kitaran pertumbuhan ialah gelagat turun naik yang berulang dalam siri penyimpangan daripada arah aliran kitaran perniagaan: ia tiba ke puncak apabila gelagat aktiviti perniagaan secara umum lebih tinggi daripada paras arah alirannya dan mencecah kawah apabila jauh di bawah paras arah aliran.

Pendekatan penunjuk kitaran ialah teknik yang diterima umum digunakan untuk menganalisa situasi ekonomi semasa dan keadaan prospek ekonomi. Pendekatan ini mengenalpasti penunjuk ekonomi secara khusus yang mana kitaran perubahannya atau pergerakannya bersifat mendahului (*lead*), serentak (*coincide*) atau menyusul (*lag*) dalam aktiviti perniagaan.

Setiap penunjuk yang terpilih untuk dimasukkan ke dalam sistem penunjuk pelopor seharusnya mempunyai rasional

### **Growth Cycles**

*Growth cycles are recurrent fluctuations in series of deviations from trend of business cycle: they reach peaks when general business activity is farthest above its trend level and troughs when it is farthest below its trend level.*

*The cyclical indicators approach is a widely accepted technique used to analyze current and prospective economic conditions. This approach identifies specific economic indicators that typically systematic lead, coincide or lag the cyclical movements in business activity.*

*Each of the indicators selected for inclusion in a system of leading indicators must have a theoretical*

dari sudut teori bagi kecenderungannya untuk mendahului aktiviti ekonomi secara sistematik. Prinsip yang sama digunakan bagi penunjuk yang terpilih sebagai sebahagian daripada siri penunjuk susulan, iaitu perlu mempunyai rasional dari segi teori bagi sifatnya sebagai penyusul. Tambahan pula, penunjuk yang dipilih adalah untuk menyatakan dan digunakan dalam hubungan sistematik komponen antara tempoh masa yang panjang dan perubahan keadaan ekonomi yang berlaku dalam tempoh tersebut.

### **Penunjuk Pelopor, Serentak dan Susulan**

Penunjuk ekonomi Malaysia terdiri daripada indeks komposit bagi penunjuk pelopor, serentak dan susulan.<sup>2</sup> Indeks-indeks ini adalah ringkasan ukuran yang dibentuk untuk menghasilkan isyarat perubahan tentang haluan aktiviti ekonomi Malaysia. Setiap indeks

*rationale for its systematic tendency to lead economic activity. The same holds true for those selected as part of a series of lagging indicators, i.e. there must be a theoretical rationale for their behaviour as ladders. In addition, the indicators are selected to display and put to use systematic relationships which were obtained over long periods of time and changes in economic situation.*

### **Leading, Coincident and Lagging Indicators**

*The Malaysian economic indicators consist of composite indices of leading, coincident and lagging indicators.<sup>2</sup> These indices are summary measures designed to signal changes in the direction of the Malaysian economic activity. Each index measures the*

mengukur gelagat agregat bagi kumpulan aktiviti ekonomi yang menunjukkan tempoh yang selari dengan pusingan kitaran perniagaan tetapi mewakili aktiviti yang berbeza. Penunjuk serentak merupakan ukuran komprehensif untuk prestasi ekonomi keseluruhan. Ia memberitahu kedudukan ekonomi semasa. Penunjuk pelopor ialah sejenis ukuran jangkaan atau komitmen baru terhadap aktiviti yang akan memberi kesan kepada ekonomi keseluruhan untuk masa hadapan. Ia memberitahu ke mana arah tuju ekonomi. Antara tanda awal bahawa pengembangan mungkin mula menurun ialah penurunan yang berterusan oleh kadar pertumbuhan indeks pelopor. Penunjuk susulan memberitahu apa yang sebenarnya telah berlaku. Ia mengukur prestasi pergerakan kitaran bagi penunjuk pelopor dan penunjuk serentak.

*aggregate behaviour of a group of economic activities that show similar timing at business cycle turns but represent different activities. The coincident indicators are comprehensive measures of the overall economic performance of the economy. They tell us where we are. The leading indicators are typically measures of anticipations or new commitments to economic activity which will affect the overall economy in the months ahead. They tell us where we are going. Among the earlier signs that an ongoing expansion may start to decelerate is a sustained decline in the leading index growth rate. Lagging indicators tell us what had happened to the economy. It measures the performance of cyclical movements of the leading and coincident indicators.*



Oleh kerana jarang terdapat penunjuk yang boleh dipercayai sepenuhnya dalam menjangka pusingan kitaran jika digunakan secara individu, penunjuk-penunjuk tersebut harus disatukan kepada komposit indeks. Oleh itu, penunjuk pelopor disatukan kepada komposit indeks pelopor, penunjuk-penunjuk serentak disatukan kepada komposit indeks serentak dan juga penunjuk susulan disatukan kepada komposit indeks susulan. Pada umumnya komposit lebih berupaya menghasilkan isyarat titik pusing berbanding penunjuk secara individu.

### **Kadar Pertumbuhan**

Kadar pertumbuhan pelopor, serentak dan susulan Malaysia adalah perubahan terlicin enam bulan pada kadar tahunan. Kadar tahunan 6-bulan terlicin adalah berasaskan kepada nisbah indeks bulanan semasa terhadap purata indeks ke atas dua belas bulan sebelumnya.<sup>3</sup>

*Since few indicators are completely reliable in anticipating cyclical turns when used alone, it is desirable to combine them into a composite index. Therefore, leading indicators are combined into a composite leading index, coincident indicators into a composite coincident index and also combined the lagging indicators into a composite lagging index. The composites are generally more reliable in warning of turning points than individual indicators.*

### **Growth Rates**

*The Malaysian leading, coincident and lagging growth rates are 6-month smoothed changes at annual rates. The 6-month smoothed annual rate is based on the ratio of the current month index to the average index over the preceding 12 months.<sup>3</sup>*

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<sup>1</sup> Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles*, National Bureau of Economic Research, N.Y., 1945, page 3.

<sup>2</sup> Indeks komposit dikira berasaskan kaedah Moore-Shiskin di mana mengandungi kadar pertumbuhan komponen indeks bulan ke bulan dipuratakan selepas penyelarasan komponen tersebut kepada unit yang sama, dan kemudiannya mengumpulkan kadar pertumbuhan purata ini kepada indeks. Indeks ini diselaras supaya (1) peratus perubahan purata mutlak sebagai komponen kitaran bagi indeks pengeluaran perindustrian; dan (2) kadar pertumbuhan purata yang sama dengan arah aliran sebagai KDNK benar.

*The composite indices are calculated using the Moore-Shiskin method which consists of averaging the month-to-month growth rates of the index components, after standardizing them to the same units, and then cumulating this average growth rate into an index. This index is then adjusted to have (1) the same average absolute percent changes as the cyclical component of industrial production; and (2) the same average trend rate of growth as real GDP.*

<sup>3</sup> Disebabkan sela antara titik tengah bulan semasa dan bulan-bulan terdahulu ialah 6.5 bulan, nisbah tersebut diselaras kepada kuasa 12/6.5 bagi mencapai maksud kadar tahunan terkompoun.

*Because the interval between the mid-points of the current month and the preceding months is 6.5 months, the ratio is raised to the 12/6.5 power to derive a compound annual rate.*