

Business Cycle Diagnostic for Malaysia

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Abstrak

Kertas ini mengkaji kitaran turun naik bagi Malaysia dan rakan dagangan utama terutamanya Jepun, Republik Korea, Thailand, Amerika Syarikat serta beberapa Negara Kesatuan Eropah terpilih. Kaedah kitaran pertumbuhan diguna untuk menentukan sama ada “economic turning points” bagi negara berkenaan selaras dengan yang di Malaysia. Kajian ini menggunakan data siri masa bulanan dari Januari 1990 hingga Ogos 2011. Secara umumnya, penemuan ini mencadangkan bahawa sektor benar ekonomi yang diwakili oleh Indeks Pengeluaran Perindustrian atau Indeks Komposit Serentak bagi negara perindustrian tidak banyak mempengaruhi kitaran turun naik di Malaysia. Dalam kebanyakan kes, “economic turning points” di Malaysia mendahului “turning points” negara perindustrian. Penemuan ini seolah-olah menyokong hipotesis “decoupling” bagi Malaysia.

Kata Kunci: Kitaran perniagaan, Decoupling, Krisis kewangan

Abstract

This paper examines the cyclical fluctuation of Malaysia and its major trading partners mainly Japan, Republic of Korea, Thailand, the United States of America (USA) and selected European Union (EU) countries. The growth cycle approach was used to find out whether the economic turning points of those countries were synchronised with Malaysia. Data used in this study were monthly series from January 1990 to August 2011. In general, the findings suggest that the real sector which is represented by the Industrial Production Index (IPI) or the Composite Coincident Index (CCI) of industrialised countries does not have much influence on the Malaysia cyclical fluctuation. In most cases, the economic turning points of Malaysia led the industrialised countries turns. The findings seem to support the decoupling hypothesis for the case of Malaysia.

Keywords: Business cycle, Decoupling, Financial crisis

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1. Introduction

Malaysia is a small and open economy. Total population in Malaysia for 2010 was 28.3 million, which was relatively smaller than other emerging economies like China and India where their total population in 2010 was 1.34 billion and 1.15 billion respectively. The domestic market was insufficient to finance additional growth for Malaysia's economy. As a result, the international trade has been playing an important role in the development of Malaysian economy and foreign trade has accounted for a significant and rising portion of its gross domestic product (GDP) in the last three decades. The percentage of international trade to GDP in 1980 was 113.0 per cent, increased to 146.9 per cent in 1990 and reached its peak to 220.4 per cent in 2000. In 2011, the percentage of international trade to GDP was 167.2 per cent.

There are some issues related to Malaysia's international trade. Firstly, the merchandise trade remains the biggest portion of the external trade as compared to trade of services. For example, the share of merchandise trade to the external sector in 2011 was 84.5 per cent whereas share of international trade in services was only 15.5 per cent (Malaysia, 2012). Secondly, Malaysia's merchandise trade was heavily dependent on its traditional trading partners. Over the last two decades, more than 50.0 per cent of Malaysia's total trade was geared by its major traditional partners: China, Singapore, Japan, USA and Thailand. Another issue was the dependency on the industrialised economy. It was considered high, but the share is declining. For example, the share of total trade of Malaysia with Japan, the USA, Germany, Netherlands, France, UK and Italy in 1990 was 49.8 per cent and reduced to 29.6 per cent in 2010 (Table 1).

Table 1: Percentage Share of Malaysia's Total Trade with Selected Trading Partners, 1990-2010

	Year				
Country	1990	1995	2000	2005	2010
USA	16.9	18.4	18.7	19.5	10.0
Germany	4.1	3.8	2.7	2.1	3.3
Netherlands	1.7	1.5	2.6	3.3	2.0
UK	4.7	3.4	2.6	1.8	1.1
France	1.4	2.0	1.2	1.3	1.1
Italy	1.1	1.0	0.6	0.5	0.7
Sub total	29.9	30.1	28.4	28.5	18.2
Japan	19.9	20.2	16.7	9.5	11.4
Thailand	3.0	3.3	3.7	5.4	5.7
South Korea	3.6	3.5	3.9	3.5	4.5
Sub total	26.5	27.0	24.3	18.4	21.6
ROW	43.6	42.9	47.3	53.1	60.2
Total	100.0	100.0	100.0	100.0	100.0

Source: Author's calculation, Monthly External Trade Statistics, various issues.

The high dependence on international trade has resulted in trade concentration especially the commodity and geographic concentrations. The commodity concentration represents the level of comparative advantage of the particular country. Meanwhile, the geographic concentration represents the diversification of trade patterns. Zarinah (2010) examined the concentration of exports and patterns of Malaysia's trade from 1973 to 2003 and found that the concentration and pattern of trade appears as significant variables in explaining the export earnings instability. These finding suggests that trade is an important variable in promoting economic growth for Malaysia and its exposure to international economic instability is inevitable.

The subprime crisis that started in the USA in early 2007 not only affected the Euro-zone economies but also other developing countries. Malaysia took pre-emptive measures to cushion the impact of externalities by stimulating the domestic expenditure through stimulus packages valued at RM 60 billion as announced in the 2009 budget. As a result, Malaysian economy dropped slightly by 1.7 per cent in 2010 as compared with -7.8 per cent recorded during the East-Asian financial crisis in 1998.

The economic interdependence between Malaysia, Japan and the USA are quite strong. For example, study by Abdul Rahman and Abd Latib (2011) using the Asian International Input-Output Tables 2005, showed that Malaysia's exports to China induced Malaysia's imports from Japan by 24.8 per cent especially for transport equipment, and imports induced from China itself by 22.9 per cent mainly imports of textile and leather products. Thus, it is essential to investigate the synchronisation of cyclical fluctuations between Malaysia and developed countries especially the major trading partners. The countries covered are the USA, selected European Union (EU) and selected Asian countries².

The objective of this paper is to provide evidence for decoupling hypothesis by analysing the business cycle fluctuation of the said countries. For complementary analysis, this study also analysed the cyclical fluctuation of two Asian economy i.e. Thailand and Republic of Korea. The period of study is from January 1990 to August 2011.

The structure of this paper is as follows: The first section reviews the literature related to the study on the decoupling hypothesis while the concept of business cycle and its measurement is discussed in the following section. The last part of the paper discusses the empirical results and the conclusion.

² The Netherlands, Germany, United Kingdom, Italy and France are the five major Malaysia's trading partners of the EUs in 2010. They contributed 8.3 per cent of Malaysia's total trade. For Asian region, Thailand and South Korea international trade share with Malaysia were increasing over time and in 2010 these two countries contributed 10.2 per cent.

2. Literature Review

The decoupling hypothesis states that correlation between emerging markets and advanced economies is declining. Some studies support the decoupling hypothesis while others found the convergence of business cycles between the emerging and the industrialised economies.

Monetary Authority of Singapore, MAS (2007) tested the structural decoupling hypothesis by estimating the long-run response (elasticity) of Asia's goods exports in response to a change in USA personal consumption expenditures on goods using monthly data from 1994 to 2007. The finding suggests that the current economic environment of the USA and Asia remain firmly coupled in the long run but are experiencing weaker synchronisation in the short run.

Kose et al. (2008) decomposed key macroeconomic aggregates such as output, consumption and investment of 106 countries (grouped into industrialised countries, emerging markets and other developing economies) for the period of 1960-2005. Their main result showed that, during the period of globalisation (1985-2005), global factor has become less important for macroeconomic fluctuations in both industrial and emerging economies. There has been a concomitant decline in the relative importance of the global factor. In other words, there was no evidence of global convergence of business cycles during the recent period of globalisation.

Korhonen and Fidrmuc (2010) in analysing the pattern of business cycles for India and China with the OECD countries found that generally the business cycles of these emerging Asian economies displayed a low degree of synchronisation, which was consistent with the decoupling hypothesis. However, the current financial crisis had a significant effect on economic developments in emerging Asian economies. They found wide differences for different frequencies of cyclical development. This was supported by Dooley and Hutchison (2009) where the emerging markets appeared to be somewhat insulated from the USA subprime crisis in the early of 2007 to summer 2008.

Study on the Indian economy showed that the Indian business cycle exhibited increasing co-movement with business cycles in industrialised economies (Jayaram, 2009). Indian business cycle synchronisation is stronger with industrial countries as a whole as opposed to the co-movement found with the USA. Supported by Waltiy (2010) study on all emerging markets (Asia, Latin America, Eastern Europe) and four different groups of advanced economies (the G7 group, the USA alone, and Europe), he found that there was no decoupling in recent years. In fact, the degree of business cycle interdependence has become stronger.

There are very few studies related to business cycles analysis in Malaysia. Yap (2009) evaluated the Malaysia's business cycle indicators and suggested that the indicators can be improved by taking into account the changing economic structure especially the emergence of new services sector activities. Meanwhile, Abd Latib and Asmaddy (2011) examined the financial variables that have the potential as early warning signal for

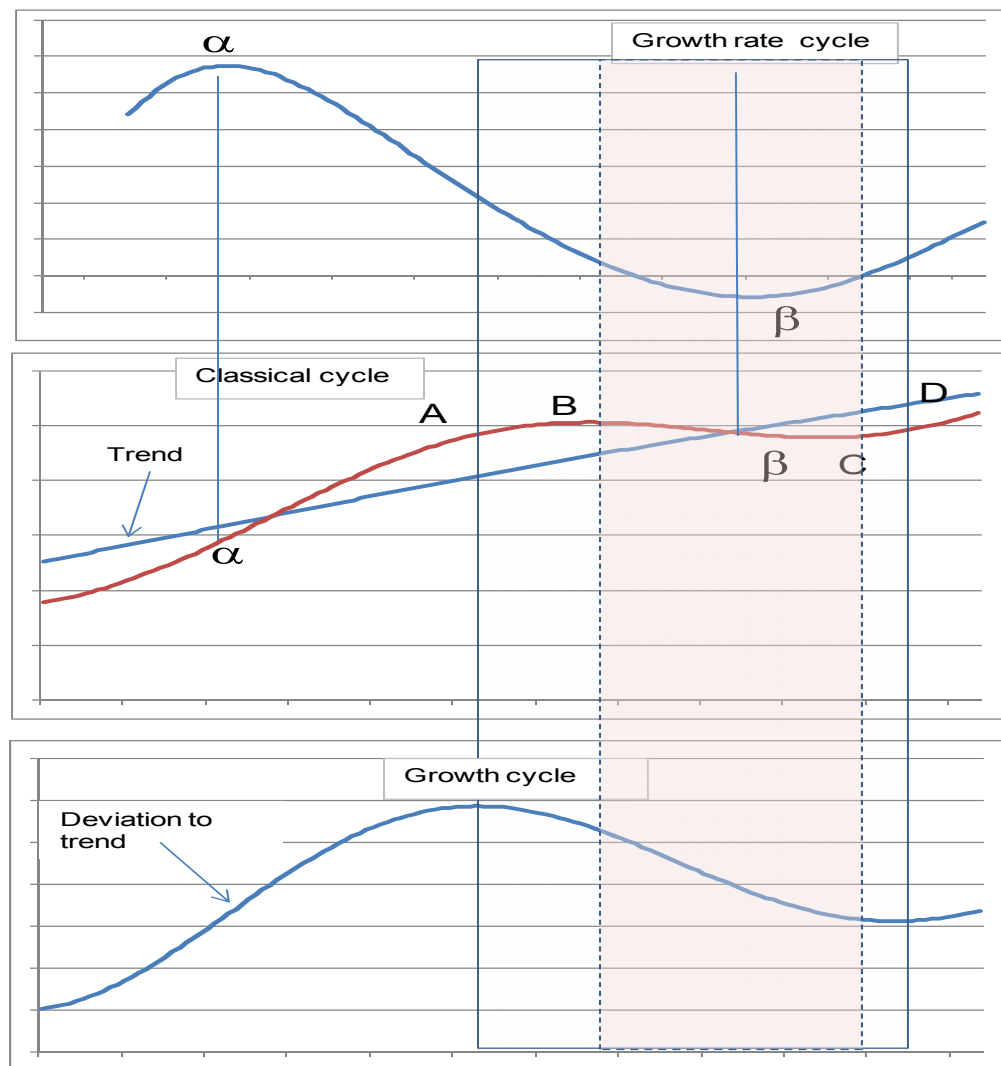
financial crisis or economic recession. To date there is no specific study to determine the level of Malaysia's business cycle synchronisation with industrialised countries. Thus, this paper is an attempt towards fulfilling the gap.

3. Research Methods

3.1 Business Cycle Concepts

Traditionally, business cycle refers to a “classical cycles” that is repeated fluctuations around a certain steady state and makes no assumption of economic growth. According to the classical cycles, when business conditions are gauged using an economic indicator, the lowest value of the indicator indicates a trough in the cycle while the highest value marks a peak.

Chart 1: Evolution of cycles and ABCD Approach



Source: Anas and Ferrera, 2003

The other two dimensions of cyclical fluctuation are the growth rate cycle and growth cycle. The growth rate cycle assumes that the growth rate of an economic indicator is cyclical where its highest point represents a peak (α) and its lowest point represents a trough (β) as in Chart 1.

The growth cycle is a fluctuation of economic indicators along its long term trend and it is generated through the deviation of indicators from its long-term trend. With this method, the point furthest from the trend on the high side represents a cyclical peak (point A), and the point furthest from the trend on the low side represents a trough (point D).

In general, troughs register later in the growth cycle than in the classical cycle, but peaks appear earlier. With the growth rate cycle, there is a tendency for both the troughs and peaks to come earlier than in the other cycles. Anas and Ferrera (2003) highlighted that the growth rates cycle was not a good indicator of future economic cycles; it is subject to erratic movements as well as to very short-live fluctuations due to transitory events producing false alarms and making the lead of the peaks extremely unstable, which remove any practical interest for the signal.

The main issue in growth cycle analysis is to estimate long-term trend of economic time series. The Phase Average Trend (PAT)³ was widely used prior to the 1990s to estimate the long term trend of economic time series. In the recent decomposition method, the Hodrick-Prescott (HP) filter or Christiano Fitzgerald (CF) filter are used as an alternative choice for estimation of long-term trend of economic time series for growth cycle analysis. Nielsson and Gyomai (2011) compared the three methods: the PAT, the HP-filter and the CF-filter, and they found that the HP-filter and the CF-filter performs better than the PAT. The choice between HP-filter and CF-filter depend on the objective of analysis. They propose researchers to use the HP-filter if the early, clear and steady turning point signals are the priority, and to use the CF filter if the analysis are sensitive to cumulative revisions.

This paper focuses on stability of turning points of each time series under study. Thus, the HP-filter will be applied to estimate the long term trend of the time series.

Basically, the HP-filter decomposes a time series (y_t) into non-stationary trend (τ_t) and a stationary residual (cyclical) component (c_t) that is:

$$y_t = \tau_t + c_t \text{ for } t = 1, \dots, T.$$

³ PAT is deviations from a centred 75-month (25-quarter) moving average and from its extrapolations at the beginning and end of the series.

The growth component should be smooth, so that the procedure recommended by Hodrick and Prescott (1997):

$$\text{Min}_\tau \sum_t (y_t - \hat{y}_t)^2 + \lambda \sum_t (\hat{y}_{t+1} - 2\hat{y}_t + \hat{y}_{t-1})^2$$

where the parameter λ is positive. If $\lambda \rightarrow 0$ the trend approximates the actual series y_t and if $\lambda \rightarrow \infty$ the trend become linear. The suggested λ is 14,400 for monthly series, $\lambda = 1,600$ for quarterly series and $\lambda = 400$ or 100 for annual series. According to Zarnowitz and Ozyildirim (2006), the estimate with larger λ is quite similar to PAT, even in many small details. The 7.5-fold increase in λ produces moderate improvements in the new H-P estimate of the “cyclical component”. Hence, this study will apply large λ in estimating long-term trend of the time series under study⁴.

The HP-filter was applied twice for each time series. The first filter is to decompose with larger λ and the second filter is to smooth the erratic movement of the series with a very small λ .

3.2 Business Cycle Indicators

The definition of business cycle in classical perspective refers to the determination of turning points in the level of economic activity. In theory, real GDP would be best suited to represent the state of the economy, as GDP being compiled from the overall of economic activity for nations. In reality, real GDP is available on quarterly basis and very few countries compiled real GDP on monthly basis. Thus, the Composite Coincident Indicator (CCI) is used as an alternative solution to measure the state of the economy. Due to limitation of data, Malaysia, Japan and Thailand used the CCI, while the remaining countries i.e. the USA, Netherlands, Germany, France, United Kingdom, Italy and Republic of Korea, their cyclical fluctuation were based on the Industrial Production Index (IPI). The used of IPI as initial reference cycle is not new. For example, it was used by Mongadini and Sedik (2003) in constructing the coincident index for Jordan.

⁴ All series must be tested for seasonality to ensure that the series were not seasonally affected. Those series that display presence of seasonality will be adjusted to remove their seasonal factors by using the SAS X11-ARIMA procedure.

4. The Findings

4.1 Malaysia's Growth Cycle Recessions

Between January 1990 to August 2011, there were six phases of growth cycle recession registered in Malaysia.⁵ The first recession was between October 1991 to November 1992 followed by the second recession between May 1997 to November 1998. With a very short-live expansion phase, the third recession took place in October 2000 to February 2002 followed by the fourth recession between April 2004 to July 2005. Another phase was registered from January 2008 to March 2009 and the most recent started in February 2011 as shown in Table 2 and Chart 2 (Appendix 1).

Table 2: The Reference Cycle of Malaysian Economy from January 1990 to August 2011

Malaysia's Reference Cycle			Duration (months)		Full Cycle (months)
Peak	Trough	Peak	Peak to Trough	Trough to Peak	
Oct-91	Nov-92	May-97	13	54	67
May-97	Nov-98	Oct-00	18	23	41
Oct-00	Feb-02	Apr-04	16	26	42
Apr-04	Jul-05	Jan-08	15	30	45
Jan-08	Mar-09	Feb-11	14	23	37
Feb-11			-	-	
Average			15	31	47

4.2 The Growth Cycle Recessions of Malaysia - USA - EU

During Malaysia's 1991/92 recession, it showed that all countries registered recessions led by Netherlands and France. On average, the advanced economies lead the Malaysia's cyclical downturn by two months but not at the recovery phase. The recessions in advanced economies were much longer than Malaysia (Table 3) (Appendix 2).

During the Asian financial crisis in 1997/98, the Malaysia's economy was highly affected and the recession was registered from May 1997 to November 1998. The cyclical turns of the USA and Netherlands registered earlier than Malaysia (considered as miss turns: between 1995 and 1997) while Germany, France, Italy and United Kingdom registered much later than Malaysia. Generally, the 1997/98 recession for Malaysia were not coupled with the advanced economies. The 2000/02 recession showed that almost all

⁵ The recession periods in this paper are slightly different from the official records of Department of Statistics, Malaysia due to the choice of λ used in estimating the long term trend of the CCI. Refer to the Malaysian Economic Indicators publication, May 2011.

countries registered peaked earlier than Malaysia except for Germany, France and Italy. On average, Malaysia experienced trough much faster than the advanced economies. The 2008/09 recession was mostly attributed by the subprime crisis in the USA. All countries registered recession during this period. The most interesting findings were the peaks and troughs of Malaysia led the advanced economies by an average of three and two months respectively. The latest peak for Malaysia was in February 2011 and no other advanced economy showed they reach the peak during this period except France in April 2011. With these findings, it support that Malaysia's economy was decoupled with the advanced economies (Chart 3-8).

4.3 The Business Cycle Recessions of Malaysia - Selected Asian Countries

The cyclical fluctuation of Malaysia and Japan almost coincided at peak which implied that there was immediate response of Japan cyclical downturn on Malaysia economy. The trough, however, showed that Malaysia recovered faster than Japan (Table 4).

The cyclical turns of Republic of Korea on the average led the Malaysia economy both at peak and trough. For the periods 1997/98, 2000/02 and 2004/05, signals for recessions and recoveries from Republic of Korea were very clear and strong. This implied that the real sector in Republic of Korea can be a good leading indicator for Malaysia (Chart 10). The cyclical analysis of turning points for Thailand showed that on average the Malaysia's cyclical turns led Thailand except for 1997/98 recession.

4.4 Discussion

The findings in 4.1, 4.2 and 4.3 propose the following facts;

- a) Generally the real sector of industrialised countries which were represented by the IPI does not have much influence on the Malaysia cyclical fluctuation. In most cases, the economic turning points of Malaysia led the industrialised countries turns;
- b) It is observed that the period of financial instability of the international market almost coincide with the Malaysia cyclical turns. For example, the UK Pounds Sterling crisis in early 1990s, East Asian financial crisis in 1997/98 and the 2007/08 USA debt crisis has an impact to the Malaysia's economy;
- c) Although the external trade contributes to economic growth but the analysis suggested that the recession in Malaysia was not attributed by the slower demand of the advanced economies. The analysis also showed that Malaysia's economic recovery was much faster than the recovery of the industrialised countries; and
- d) These findings were only based on judgement rather than the appropriate statistical test. Thus it is suggested for further research to revisit these issues by conducting the appropriate statistical test.

5. Conclusion and Recommendations

This paper examined the fluctuation of advanced economies that traditionally have a larger share of trade with Malaysia. The growth cycle approach was used to estimate the cyclical peak and trough of economy for the respective countries. For Malaysia, Japan and Thailand, the CCI was used to estimate their reference cycles. While for the USA, Netherlands, Germany, France, Italy, UK, Japan and Korea, the IPI was used in representing their cyclical fluctuation.

The HP- filter model was used to estimate the long term trend of the respective time series and was applied twice. The first filter is to decompose those series by removing their estimated long term trend and the second filter is to smooth the erratic movement of the series.

The cyclical analysis of the lead/lag table seems to suggest that the decoupling hypothesis is true for Malaysia. The Malaysia economy was not much influenced by the instability of real sectors in the advanced economy. The analysis also showed that Malaysia's economic recovery was much faster than the recovery of the industrialised countries.

The findings of this study were, however, insufficient to establish strong evidence of decoupling hypothesis. It is suggested to revisit this issue by using proper statistical test to support the findings.

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Appendix 1

Chart 2: The Malaysia's Composite Coincident Index, January 1990 – August 2011

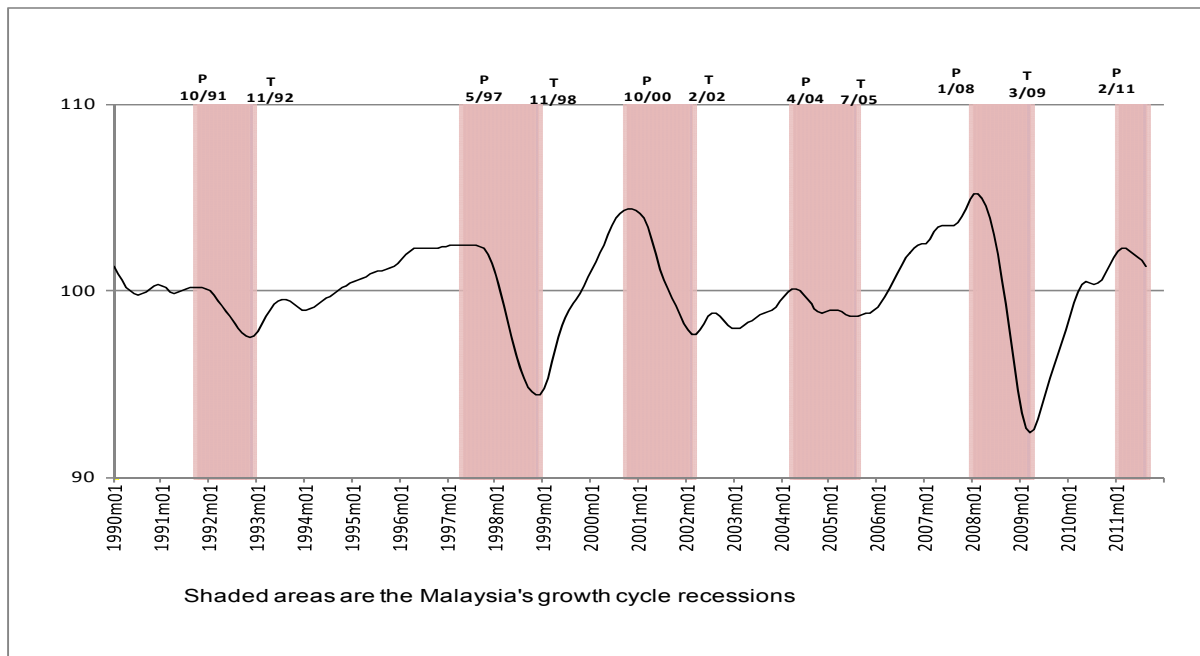


Chart 3: The Index of Industrial Production, USA, January 1990 – August 2011

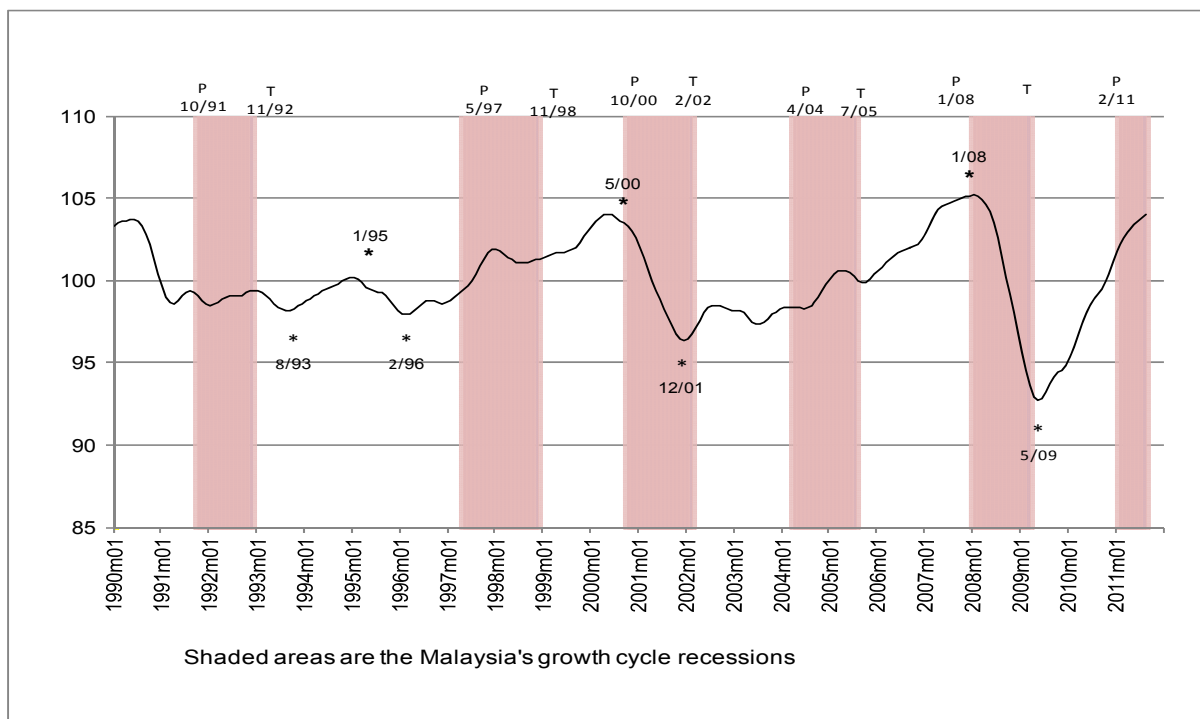


Chart 4: The Index of Industrial Production, Netherlands, January 1990 – August 2011

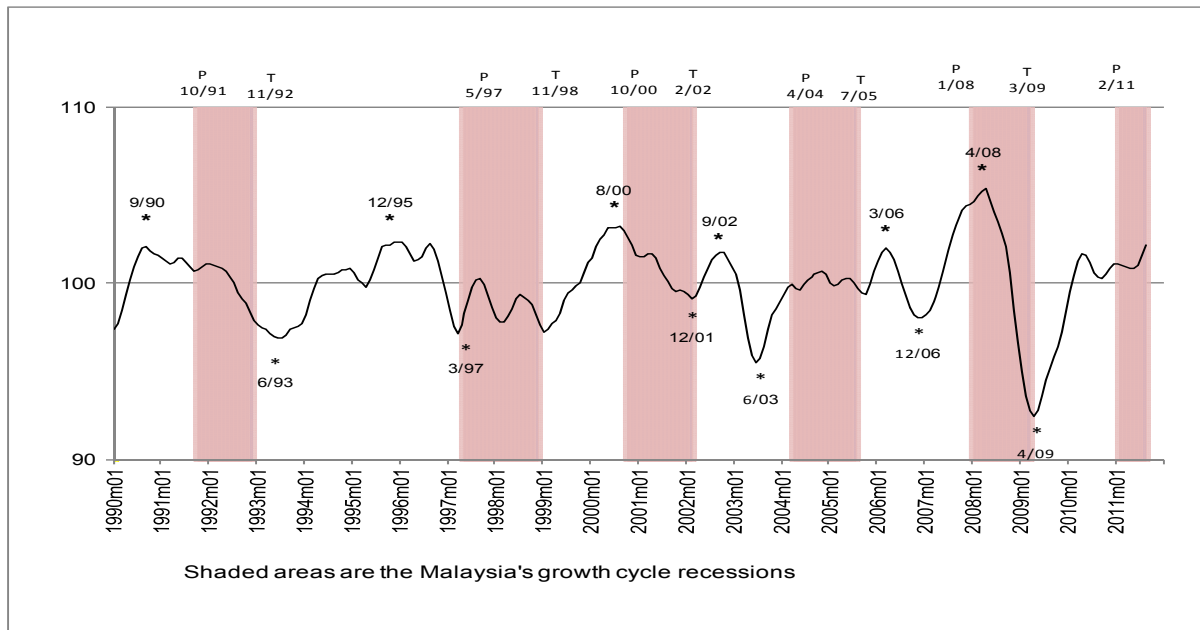


Chart 5: The Index of Industrial Production, Germany, January 1990 – August 2011

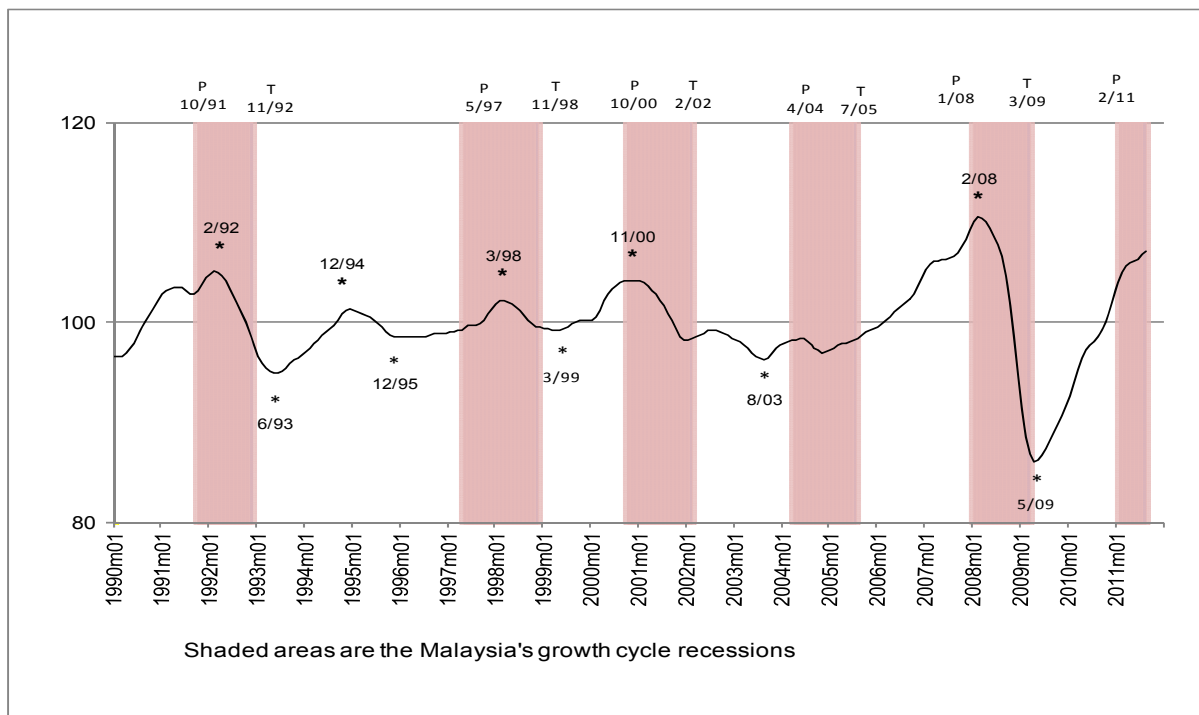


Chart 6: The Index of Industrial Production, France, January 1990 – August 2011

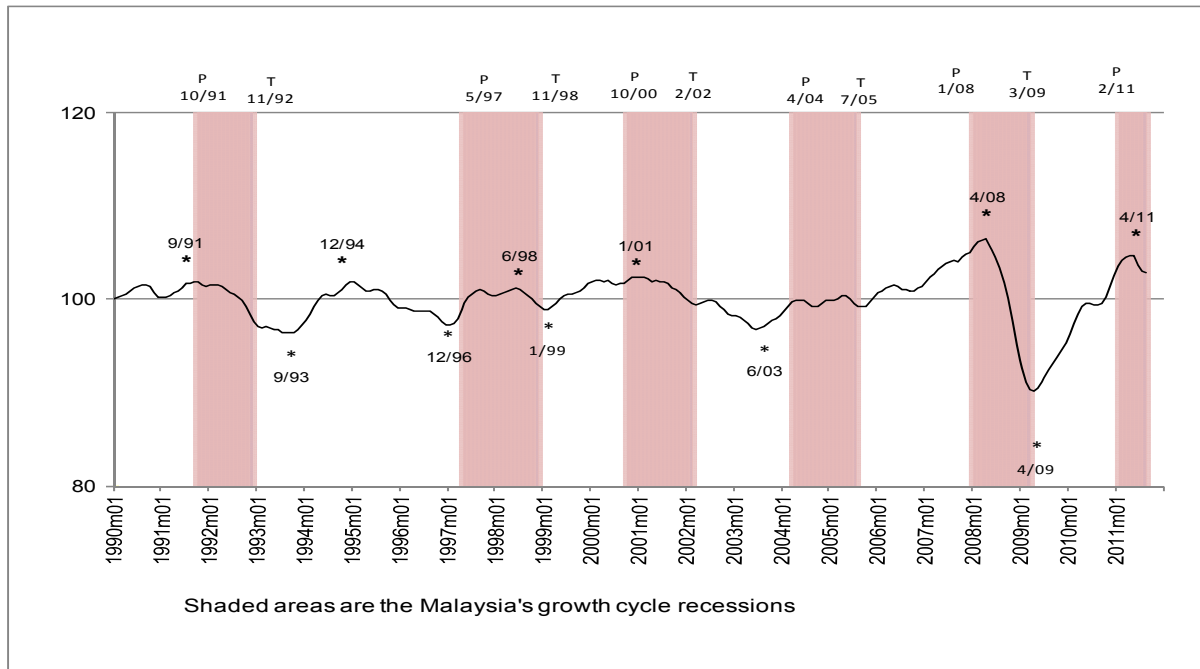


Chart 7: The Index of Industrial Production, Italy, January 1990 – August 2011

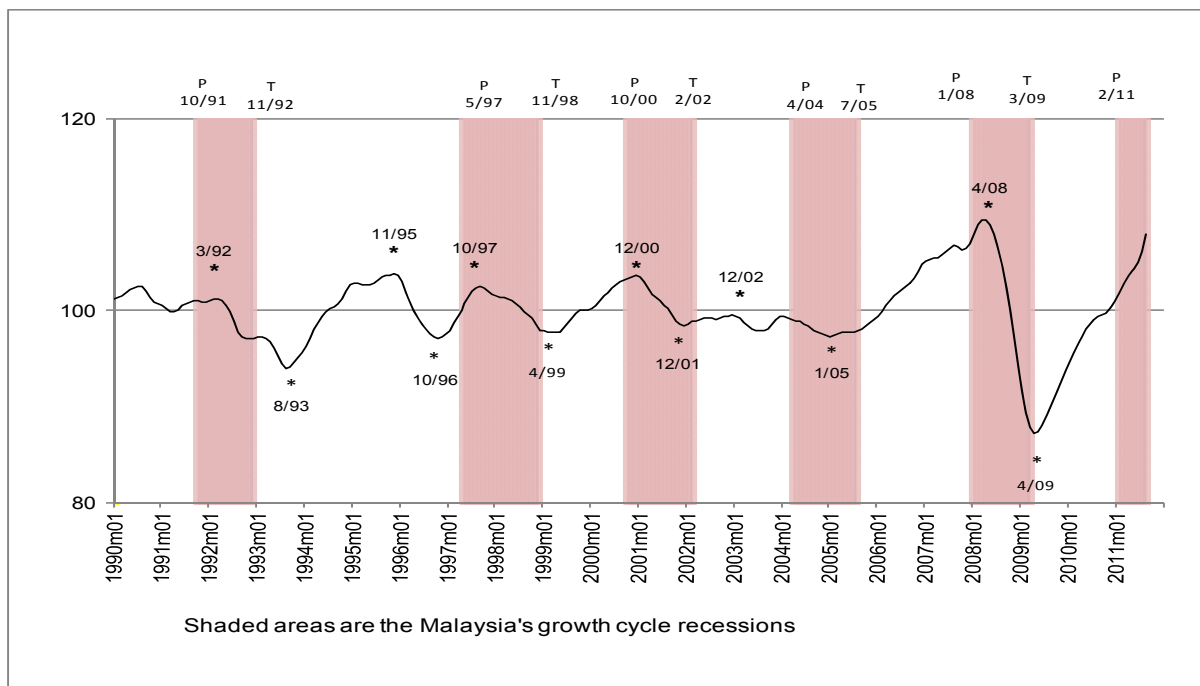


Chart 8: The Index of Industrial Production, UK, January 1990 – August 2011

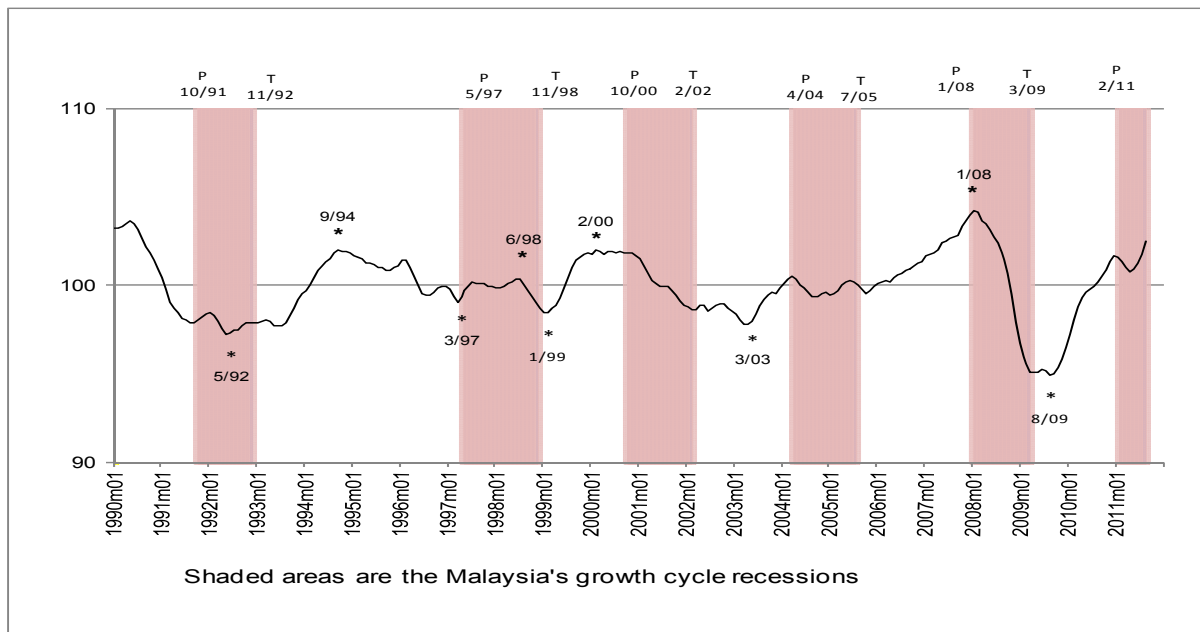


Chart 9: The Composite Coincident Index, Japan, January 1990 – August 2011

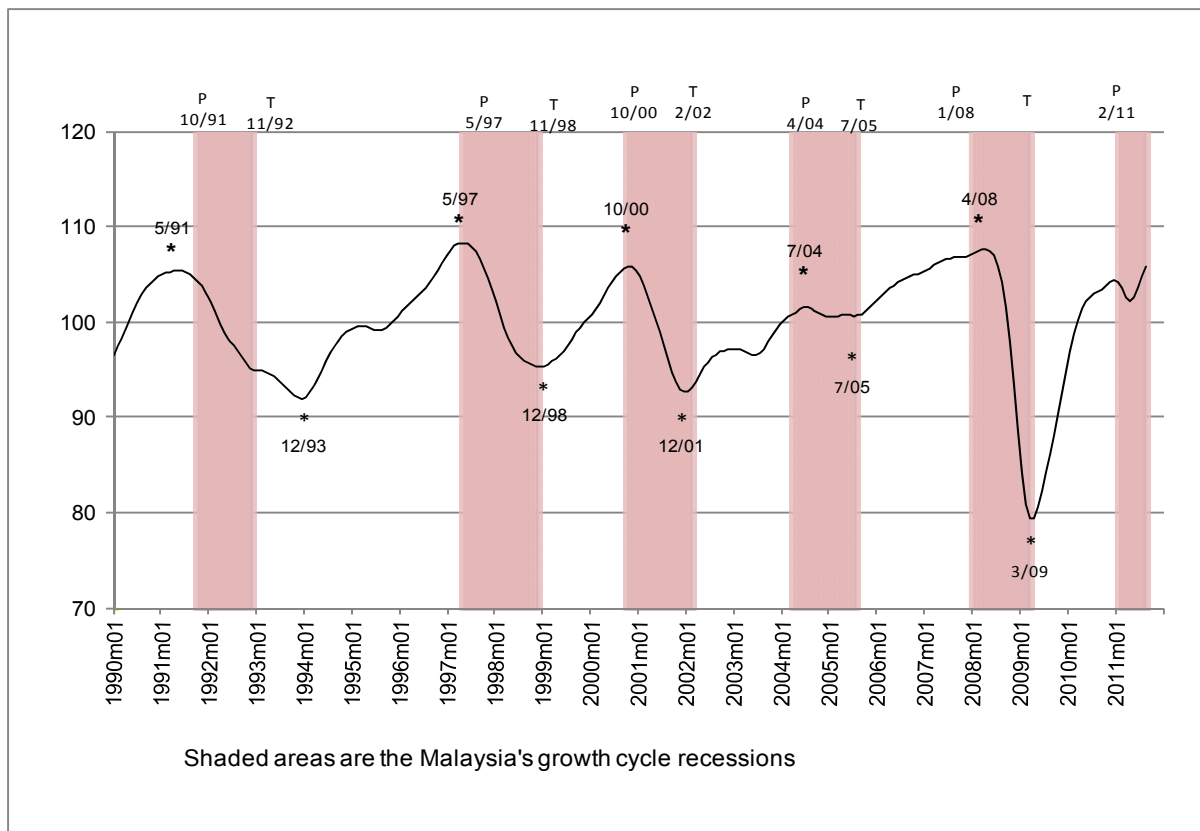


Chart 10: The Index of Industrial Production, Republic of Korea, January 1990 – August 2011

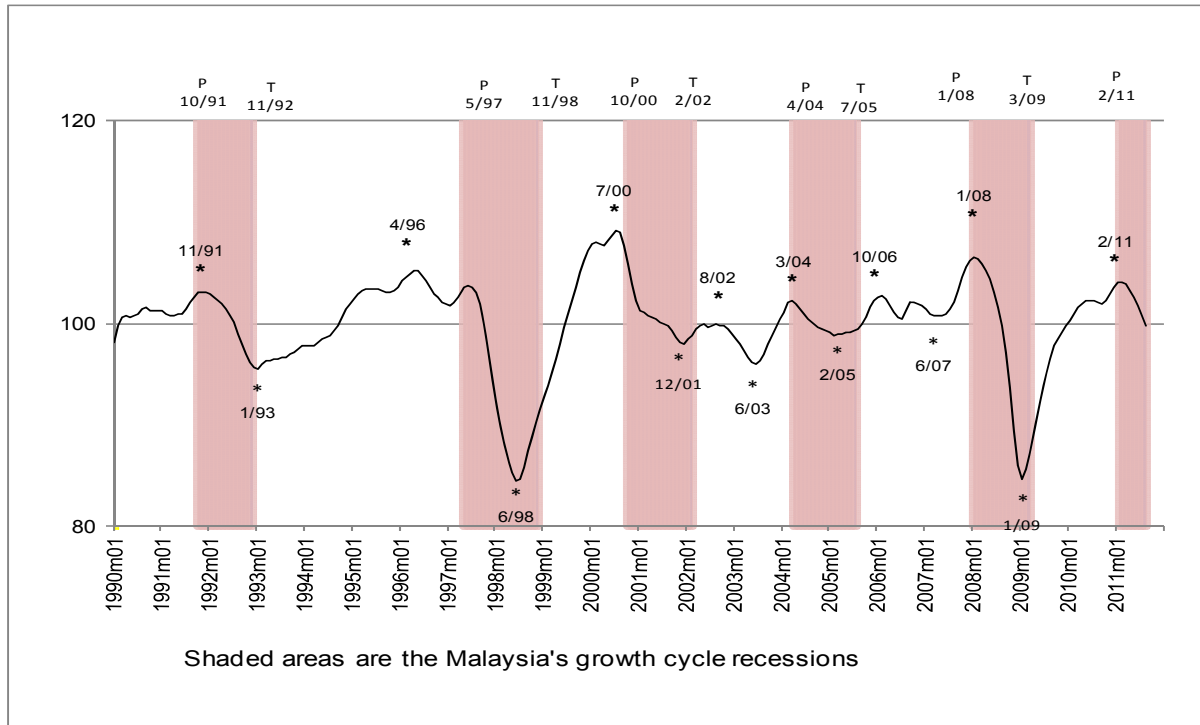


Chart 11: The Composite Coincident Index, Thailand, January 1990 – August 2011

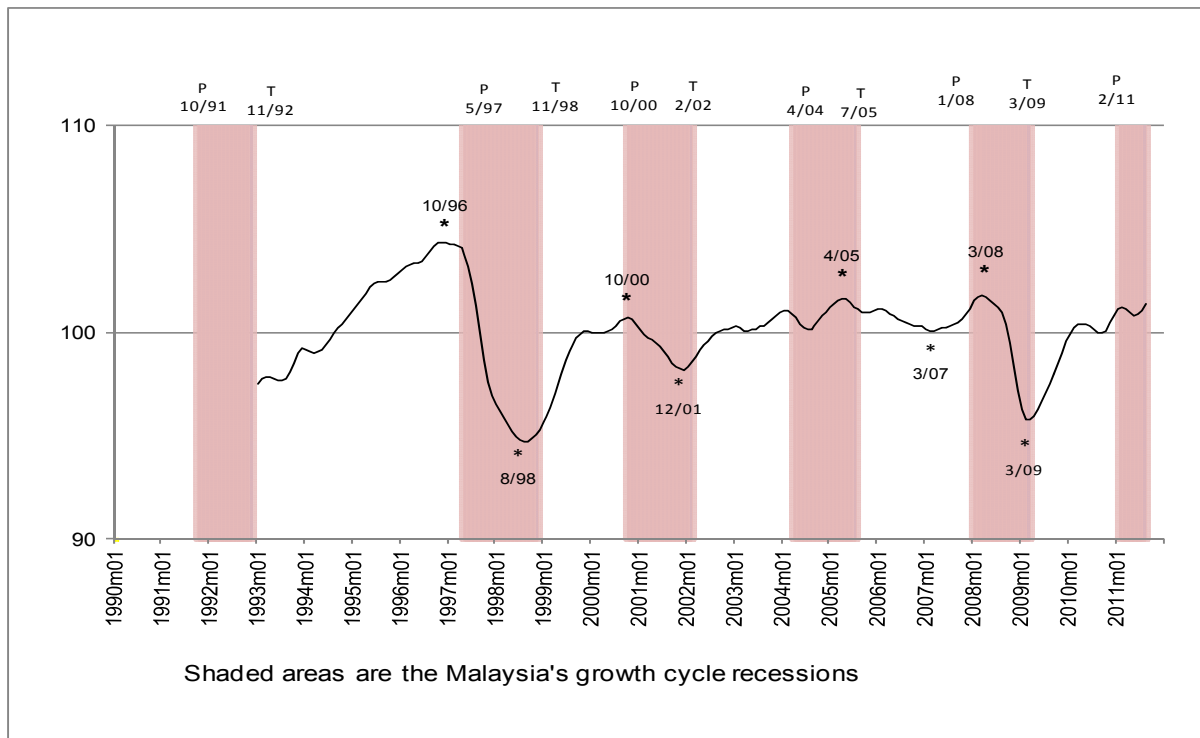


Table 3: Lead/Lag Analysis: The Cyclical Fluctuation of the Selected Advance Countries (West) and Malaysia Growth Cycle Recessions, January 1990 to August 2011

Malaysia's Reference Cycle		USA		Netherlands		Germany		France		Italy		UK		Average	
Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough
Oct-91	Nov-92		Aug-93	Sep-90	Jun-93	Feb-92	Jun-93	Sep-91	Sep-93	Mar-92	Aug-93		May-92		
			9	-13	7	4	7	-1	10	5	9		-6	-1	6
May-97	Nov-98	miss turns		miss turns		Mar-98	May-99	Jun-98	Jan-99	Oct-97	Apr-99	Jun-98	Jan-99		
						10	6	13	2	5	5	13	2	9	4
Oct-00	Feb-02	May-00	Dec-01	Aug-00	Dec-01	Nov-00	Aug-03	Jan-01	Jun-03	Dec-00	Dec-01	Feb-00	Mar-03		
		-5	-2	-2	-2	1	18	3	16	2	-2	-8	13	1	7
Apr-04	Jul-05	No turns		miss turns		No turns		No turns		Dec-02	Jan-05	No turns			
										-16	-6			-16	-6
Jan-08	Mar-09	Jan-08	May-09	Apr-08	Apr-09	Feb-08	May-09	Apr-08	Apr-09	Apr-08	Apr-09	Jan-08	Aug-09		
		0	2	3	1	1	2	3	1	3	1	0	5	3	2
Feb-11		-						Apr-11							
								2						2	
Extra Turns		-	-	Mar-06	Dec-06	Dec-94	Dec-95	Dec-94	Dec-95	Nov-95	Oct-96	Sep-94	Mar-97		
Miss turns		Jan-95	Feb-96	Dec-95	Mar-97										
				Sep-02	Jun-03										
Average Lead/Lag		-3	3	-4	2	4	8	4	7	0	1	2	3	0	3

Note: The peak and trough were derived from the respective charts (chart 3-8). Negative figure in the table represents “leading”, zero means “coincide” and positive indicates “lagging” of the Malaysia’s reference cycles.

Table 4: Lead/Lag Analysis: The Cyclical Fluctuation of Selected Asian Countries (East) and Malaysia Growth Cycle Recessions, January 1990 to August 2011

Malaysia's Reference Cycle		Japan		Korea		Thailand		Average	
Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough	Peak	Trough
Oct-91	Nov-92	May-91	Dec-93	Nov-91	Jan-93				
		-5	13	1	2			-1	8
May-97	Nov-98	May-97	Dec-98	Apr-96	Jun-98	Mar-96	May-98		
		0	1	-13	-5	-14	-6	-7	-3
Oct-00	Feb-02	Nov-00	Dec-01	Aug-00	Dec-01	Oct-00	Nov-01		
		1	-2	-2	-2	0	-3	0	-2
Apr-04	Jul-05	Jul-04	Jul-05	Mar-04	Feb-05	Apr-05	Mar-07		
		3	0	-1	-5	12	20	4	5
Jan-08	Mar-09	Apr-08	Mar-09	Jan-08	Jan-09	Mar-08	Mar-09		
		3	0	0	-2	2	0	1	-1
Feb-11				Feb-11					
				0				0	
Extra Turns				Aug-02	Jun-03				
				Oct-06	Jun-07				
Average Lead/Lag		0	2	-3	-2	0	3	-1	1

Note: The peak and trough were derived from the respective charts (chart 9-11). Negative figure in the table represents “leading”, zero means “coincide” and positive indicates “lagging” of the Malaysia’s reference cycles.