# STOCK PRICE AND ENERGY PRICE: A DISAGGREGATE ANALYSIS

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**Abstract**

This paper investigates the impact of oil price on the stock returns of eight economic sectors namely; Construction (CON), Consumer (CSU), Finance (FIN), Industrial (IND), Plantation (PLN), Property (PRP), Services (SER), and Mining (MIN). By employing the Augmented Capital Asset Pricing Model (A-CAPM), two tests were conducted. The first tests on symmetric relationship while the second detects the presence of an asymmetric relationship. The estimated results from Test 1 documented insignificant results in all sector analyses. These findings signified that the stock returns were not exposed to oil price shocks. The estimated results of Test 2 indicated the presence of one significant result in industrial (IND) analysis. In particular, the returns of the IND sector were negatively exposed to change in oil price, and it was more significant during periods of oil price increased. In other word, the event of oil price increased significantly reduced the returns of the IND sector.

**Keywords** Asset returns, financial market, oil price, symmetric test, asymmetric test, Augmented CAPM Model.

## Introduction

Oil crisis stroked again. The last phase of oil crisis period extended from late 90s to 2007. Many studies were conducted to evaluate its impact on the economy and the outcome of these studies showed mixed results. The difference are primarily focused on the status of the country whether it is an oil producing or oil consumption country.

Malaysia is an oil producing country and the domestic oil price is fixed by the government. The event of oil price surged during this crisis period had inflicted a soaring fuel subsidy bill to the Malaysian government, which according to a report from the Economic Planning Unit (EPU, 2005), further subsidization in 2004 caused a RM16 billion (USD4.23 billion) reduction in the government's budget in year 2005, which constitute an increase of 35% from the amount in the previous year (APPENDIX I). The continuous increase in the world oil price in 2000s had pressured the Malaysian government to review its policy on domestic oil price setting[1] and finally decided to adjust the retail price of oil in the domestic market (APPENDIX II) in correspond to the movements in the world oil price.

The change in domestic oil prices in response to changes in world oil prices has raised an important question on the impact of oil price on the Malaysian economy. In the previous literature, Norasibah (2009a and 2009b) has put specific focus on the impact of oil price on the output (GDP) and the stock markets. These two studies were aggregate type of analyses. Based on the findings of the two studies, it appeared that, change in oil price significantly affect the real (output) market only. The financial market documented insignificant results in all analyses. These findings provide indication that changes in oil price has no significant impact on the value of asset prices.

Looking into the case closely, the findings of these two studies were limited to macro or aggregate analyses only. No extended analyses are conducted for detailed information focusing on this issue. In relation to this, the existing study intends to give specific attention to financial market disaggregate analysis. The reason for the choice is because; the analysis at the aggregate level fails to detect any significant relationship, and this finding provides us a motivation to explore the issue further by conducting detailed analysis at disaggregate level. The findings in the disaggregated analysis may provide not only an in depth analyses that goes further into microeconomic perspective, but also may add additional insight to our understanding on which sector is oil dependent and which sector is not sensitive to oil price changes. In this study, other than investigating the direction of relationship between these variables, we also attempt to detect the presence of asymmetric relationship between the oil price and asset price. The information obtained from these analyses will assist us to better understand the behavior of the industries in the financial sector in response to changes in oil price.

The paper is comprised of five sections. The next section highlights the literature reviews, and followed by section 3 which focuses on methodology. The following two sections respectively report the empirical findings of oil price impact on the asset prices, and the final section concludes.

## Literature Review

Many studies suggest oil price variations have significant consequences on economic activity. This is because oil is a basic input to production, in which an increase in oil price leads to a rise in production costs which in turn may negatively affect the volume of output produced in the economy. Financial market, on the other hand, is highly volatile and with this type of market behavior, many studies failed to identify the relationship between asset price or returns with oil price change. In principle, economists believe the two markets interact with each other. Their explanation says that, if oil affects real output, increase in oil price may also depress the stock price

[1] Being a net oil exporting country, increase in oil prices at the global market implies the country's export earnings from oil go up. Therefore, the additional revenue is enough to cover up the cost of higher subsidy in the case domestic oil price is to maintain at the original level. However, the usage of the additional revenue to cover the higher cost of subsidy it is not part of economic planning. Moreover, it is considered unwise for the government to utilize the additional income earned to fully subsidize fuel prices. In other words, the additional revenue is also meant for the country's development programs.

by lowering expected earnings. Therefore, this explanation provides a basis on the association between oil price with the financial market.

From the existing literatures, limited number of studies put focus on the relationship between these two variables. These studies mainly concentrate on industrialized countries such as the United States, United Kingdom, Japan, and Canada. Among the few which are popularly referred to are studies by Chen, Roll & Ross (1986), Manning (1991), Kaneko & Lee (1995), Huang, Masulis & Stoll (1996), Ciner (2001), Jones & Kaul (1996), Hondroyiannis & Papapetrou (2001), Faff & Brailsford (1999), Papapetrou (2001), Sadorsky (2003), Hammoudeh & Eleisa (2004), Sadorsky (1999), Cobo-Reyes and Cuiros (2005), and Agusman & Derianto (2008). Of all studies, Chen et al. (1986) , Hamao (1989) detect the absence of significant relationship between oil price change and stock price. Kaneko & Lee (1995), Hondroyiannis & Papapetrou (2001) and Kaul & Seyhun (1990), Jones & Kaul (1996), and Sadorsky (1999) on the other hand figured significant relationship between the two variables in their studies. Finally, studies by Hammoudeh & Eleisa (2004) document mixed results.

In the latest progress; the study is extended to disaggregate type of analysis. Among the few studies conducted at this level are; Manning (1991), Huang, Masulis & Stoll (1996), Ciner (2001), Papapetrou (2001), Sadorsky (2003), Cobo-Reyes & Cuiros (2005). Papapetrou (2001), Cobo-Reyes & Cuiros (2005), and Sadorsky (2003) have figure significant relationship between the two variables at disaggregate. Other studies of Manning (1991) reports insignificant relationship and studies by Agusman & Derianto (2008), and Faff & Brailsford (1999) document mix results.

## Methodology

There are two types of oil prices that can be considered in this analysis; the domestic oil price and the world oil price. The fact that the domestic oil price is controlled by the government, the movements were relatively fixed and flat, and very little variations were detected. In econometric analysis, testing a variable against other variable that is flat (relatively unchanged) directly implies the non-existence of any kind of relationship. In other word, it provides indication on the presence of insignificant relationship between the two tested variables. Based on this onservation, the current research choose to concentrate on using world oil price, as the proxy to oil price variable (Poil), instead of domestic oil price. The world oil price is derived from West Texas Intermediate (WTI)[2], of US crude oil prices, converted into Ringgit Malaysia (RM) value[3]. The reason for not considering the other type of world oil prices (Brent of Europe) is because, the movements in prices among these two types of oil prices tend to be parallel and the

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[2] WTI is the average crude oil spot prices - international price (USD) per barrel.

[3] The conversion from the USD value into the RM value is following this formula;

$$Pworld_{RM} = \frac{(Pworld_{USD} \times ExchangeRates)}{Deflator}$$

Most of the empirical literature which analyze the effect of oil price shocks in different economies use either the USD world price as a common indicator of the world market disturbances that affect all countries (Burbidge & Harrison, 1984) or the world oil price is converted into each respective country's currency by means of the market exchange rate like Mork et al., (1994) for OECD countries or Abeysinghe (2001) for Asian countries. A study by Nandha & Hammoudeh (2007) highlights the significance of using oil price expressed in domestic currency to capture the sensitivity of a country's stock market to changes in oil prices while study by Cunado and de Garcia (2004), which test the impact on real variables, has observed more significant results are obtained when oil price shocks are defined in local currency.

difference is not substantial.[4] As part of the standard procedure, the world oil price is deflated using world CPI to transform it into real values.

In this study, two sets of data from the time-span of 1992.9 – 2005.12[5] and 1993.9 - 2005.12[6] are employed. The time period of the study is selected based on data availability.

In this study, the oil price impact is examined against the asset returns of eight economic sectors in the financial market namely - Construction (CON), Consumer (CSU), Finance (FIN), Industrial (IND), Plantation (PLN), Property (PRP), Services (SER), and Mining (MIN). Monthly data is employed instead of higher frequency data such as daily or weekly data. The choice made is based on two reasons. Firstly, the higher frequency data, such as the daily and weekly data, contain too much noise and are subject to the problem of non-synchronous and infrequent trading. Secondly, the value of an asset does not fluctuate by day or by week according to day-to-day or week-to-week ups and downs in the market. For these reasons, the usage of the monthly data is more sensible (Ibrahim, 2006).

The data are obtained from the Bloomberg Database, International Financial Statistic (IFS) CD-Rom, and also from various issues of Bank Negara Reports, the BURSA Malaysia and the Energy Information Administration (EIA) websites.

## The Tests

Two tests were conducted via the Augmented-CAPM (A-CAPM) model. The first test focused on symmetric analysis, while the second tested on the presence of asymmetric relationship. The two tests were respectively identified as Test 1 and Test 2. The measure of returns were derived from sector indices which include; construction index (CON), consumer index (CSU), finance index (FIN), industrial index (IND), plantation index (PLN), property index (PRP), services index (SER), and mining index (MIN).

### *A. Test 1:The Symmetric Analysis*

This analysis tests the elasticity (sensitivity) of returns to oil price changes. Following the model by Jorion (1990) , we employs the standard market model augmented by including the change in oil price variable *(POIL*) as the focus variable, and other explanatory variables in the equation function. The chronology of the equation transformation process are as follows;

The basic model introduced by Jorion (1990) is captured by this equation;

$$AR_{it} = a + \beta MR_t + q_1 X_{it} + \sigma_t \quad (1)$$

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4 The same applies to the world crude oil prices. In a study by Meghreyeh (2004) who does estimation using a few oil price types, i.e. daily for Arab light, Arab Medium, Dubai and Brent as alternatives for the world price of oil, found that these measures did not substantively affect the results.

5 For finance, industrial, plantation and mining indices

6 For construction, consumer, production, service indices

Where $AR_{it}$[7] is the return of the sector under consideration, $MR_t$ is the market return,[8] $X_t$ is (are) the focus variable(s) and finally $\sigma_t$ represents the disturbance term. In the current study, we extend the basic model by including oil price variable as a basis for our analysis and we name it as Model 1.

Model 1 is written as;

$$AR_{it} = a + \beta MR_t + q_1 POIL_t + \sigma_t \quad (2)$$

Where $POIL_t$ represents change in oil price. The returns and the oil price variable are computed using logarithmic difference. In the above model, the focal coefficient is $q_1$, as it measures the sensitivity of returns to changes in oil prices. If null hypothesis is rejected, the analysis is interpreted as; "change in oil price affects the returns". Equation 2 of model 1 is used to test the existence of symmetric relationship in Test 1.

*B. Test 2: The Asymmetric Test*

It is important to highlight that the above regression assumes symmetric oil price effect on returns as it does not take into account changes in values in returns during periods of oil price increase or decrease. Following Tai (2005) and Ihrig & Prior (2005), Test 1 is extended to Model 2 by incorporating changes in market conditions.

Test 2 is written as;

$$AR_{it} = a + \beta MR_t + q_1 POIL_t + (q_2 D_t \text{ X } POIL_t) + \sigma_t \quad (3)$$

Where $D_t$ is a dummy variable representing oil price increase dummy that takes the value of *1* during oil price increase period and *0* otherwise. Based on equation [3], the question on whether oil price changes have any influence on stock returns can be assessed. In particular, the measure of impact, or also known as exposure, will be $q_1$ during oil price decrease period and $(q_1 + q_2)$ during oil price increase period. The difference in impact values between price increase and price decrease can be tested on the null hypothesis that $q_2 = 0$. Equation 3 of model 2 is used to test the existence of asymmetric relationship in Test 2.

## Results Reporting

Table 1 presents the descriptive statistic of the returns of each sector and their correlations with the world oil price.

7 The monthly return for the each sector considered is; $r_{it} = (p_t - p_{t-1}) / p_{t-1}$ or $r_{it} = \log(p_t) - \log(p_{t-1})$, where $p_{it}$ is the price of the index i at time t, while $p_{t-1}$ is the closing price for the previous period (month).

8 Kuala Lumpur Composite Index is used to represent the market portfolio.

**Table 1** Descriptive Statistic Results

| Sectors \ Stats. | Mean | Std. Dev. | Jarque-Bera | Correlations |
|---|---|---|---|---|
| CON | -0.0076 | 0.1241 | 99.1077*** | -0.095 |
| CSU | 0.0000 | 0.0776 | 77.2821*** | -0.109 |
| FIN | 0.0003 | 0.1148 | 99.5545*** | -0.144 |
| IND | 0.0001 | 0.0768 | 28.6409*** | -0.066 |
| PLN | 0.0012 | 0.0929 | 200.9267*** | -0.085 |
| PRP | -0.0121 | 0.1103 | 16.6901*** | -0.102 |
| SER | -0.0034 | 0.0896 | 7.7738** | -0.092 |
| MIN | -0.0041 | 0.1472 | 46.2817*** | -0.105 |
| MR | -0.0018 | 0.0857 | 21.3619*** | -0.094 |
| Poil | 0.0089 | 0.0768 | 5.4808*** | 1.000 |

*Notes:* The descriptive statistics are based on the returns of the indices and the changes in oil prices. *** and ** denote significant at 1% and 5% levels. Values are rounded to the nearest three decimal points.

Over the sample period, the market recorded a negative return of 0.18% per month. Out of eight indices; three sectors experienced positive average monthly returns with PLN having the highest return of 0.12% per month, followed by FIN (0.03%) and IND (0.01%). In the case of CSU; despite a positive return, the average percent is too low or near zero. The other four sectors exhibit negative average monthly returns. The Properties (PRP) sector seems to suffer most with a negative average monthly return of almost 1.21%, followed by CON (0.76%), MIN (0.41%) and SER (0.34%).The generally negative returns of most indices are attributed in large part to the drastic drop in Malaysia's share price during the 1997/98 Asian Financial Crisis.

Column three of Table 1 displays the unconditional standard deviation results which provide information on the volatility of the asset returns. Based on the given figure, six sectors are detected with higher volatility than the market return. In particular, the MIN sector exhibits the highest volatility rate, followed by the CON, FIN, PRP, PLN, and SER, by the rate of 14.72%, 12.41%, and 11.48%, 11.03%, 9.29% and 8.96% respectively. The CSU and IND sectors have both exhibits the lowest volatility rate, an average of 8%.

The Jarque-Bera test for normality of the returns soundly rejects the null hypothesis that they are normally distributed. This result conforms to the widely documented behavior of speculative prices. To be specific, they tend to be characterized by volatility clustering or in other words, their distribution is leptokurtic.

Focusing on the oil price variable, the oil price experiences an increase throughout the sample period. On average, t results indicate that the oil price increases at an average rate of 0.89%.

To gauge the relations between returns and oil prices, simple correlation coefficients between changes in oil price is computed against each asset returns. The results are displayed in the last column of Table 1. Taking an overview of the results, all returns appear to correlate negatively with both oil price. In particular; the FIN, CSU, PRP and

MIN sectors exhibit stronger correlation relationship than other returns as the value of the coefficient is more than 10%.

Given the relative volatility of these sectors, the correlation rates are suggestive of the influence of oil price changes on their returns. In other words; the correlation results provide information on different degrees of oil price impact on sectors in the financial market. However, these statements are only indicative as the computed correlations do not control for market risk. To be more precise, the analysis is extended by employing the augmented CAPM model to evaluate the degree of oil price impact of various indices.

## A. Estimated Results of Test 1

The results summary for Test 1 is presented in Table 2. The main focus is on the direction and the significance of the $\theta_1$ coefficient.

In general, the results of the analyses are satisfactory as indicated by high explanatory power of adjusted-$R^2$. Moreover, the market beta is positive and statistically significant for all sectors indicating co-movement between returns of sectors of the economy and market returns. Focusing on each coefficient value, a number of sectors are detected to be riskier than the market portfolio, while others are less risky.

The results classify the CON, FIN, MIN, PRP and SER sectors as more volatile than the market portfolio for having the market beta value of more than 1. The finding signifies that these sectors are more susceptible to shocks and more speculative in nature compares to other sectors. The CSU, IND, and PLN sectors respectively document a market beta value of less than 1. Such outcome provides indication that the sectors are less risky or are more secure than the market portfolio.

Focusing on the $\theta_1$ coefficient, the results indicate that the oil price effect differs in terms of direction across sectors in all analyses. In particular, all sectors document negative exposure except for the CON and PRP sectors. All coefficients however, appear to be insignificant at 5% level.

The finding of insignificant results contradicts our hypothesis which predicts the stock returns are negatively exposed to oil price shocks. We presume the linear specification may not be able to capture the interactions between the oil price and the stock returns variables efficiently. Based on this justification the analysis of oil price impact on returns is extended by using a non-linear specification, which takes into account the market interactions. In particular, we focus on how the returns of sectors of the economy are exposed during oil price increase and oil price decrease periods. This analysis is a test of asymmetric relationship.

**Table 2** Estimated Results for Test 1

| | C | MR | Poil ($\theta_1$) | Adj. $R^2$ | DW |
|---|---|---|---|---|---|
| CON | -0.0029 | 1.2147*** | 0.0351 | 0.817 | 1.958 |
| | (0.0051) | (0.0535) | (0.0621) | | |
| CSU | 0.0032 | 0.7948*** | -0.0292 | 0.827 | 2.332 |
| | (0.0028) | (0.0326) | (0.0371) | | |
| FIN | 0.0041 | 1.1839*** | -0.0291 | 0.905 | 2.376 |
| | (0.0033) | (0.0361) | (0.0408) | | |

| | | | | | |
|---|---|---|---|---|---|
| IND | 0.0038 | 0.8528*** | -0.0069 | 0.915 | 2.455 |
| | (0.0019) | (0.0227) | (0.0258) | | |
| PLN | 0.0022 | 0.9122*** | -0.0499 | 0.672 | 2.207 |
| | (0.0051) | (0.0548) | (0.0622) | | |
| PRP | -0.0091 | 1.0652*** | 0.0152 | 0.769 | 1.921 |
| | (0.0053) | (0.0548) | (0.0621) | | |
| SER | -0.0021 | 1.0401*** | -0.0133 | 0.971 | 2.078 |
| | (0.0011) | (0.0158) | (0.0181) | | |
| MIN | -0.0022 | 1.3377*** | -0.0692 | 0.604 | 2.176 |
| | (0.0091) | (0.0952) | (0.1081) | | |

*Notes:* Numbers in parentheses are standard errors. *** significant at 1% level.

## B. Estimated Results of Test 2

The overall results for Test 2 are presented in Table 3. Compares to Test 1, the beta risk estimates obtained in Model 2 in all analyses remain robust. Focusing on the $\theta_2$ coefficient, significant result is documented in the IND analysis only. This finding provides evidence that IND sector is negatively exposed to world oil price shocks (Poil) and is susceptible to asymmetric type of exposure. In particular, during oil price decrease periods, the value of exposure ($q_1$) is 7.5% while during oil price increase periods; the value of exposure during oil price increase periods ($q_1 + q_2$) is - 8.7%. Based on the magnitude of the exposures, we may infer that IND sector is more sensitive to oil price increase than oil price decrease periods.

**Table 3** Estimated Results of Test 2

| | C | MR | $\theta_1$ | $\theta_2$ | Adj. $R^2$ | DW |
|---|---|---|---|---|---|---|
| CON | 0.002 | 1.218*** | 0.118 | -0.165 | 0.818 | 1.97 |
| | (0.008) | (0.055) | (0.118) | (0.200) | | |
| CSU | 0.002 | 0.795*** | -0.042 | 0.025 | 0.827 | 2.335 |
| | (0.005) | (0.033) | (0.071) | (0.120) | | |
| FIN | 0.001 | 1.182*** | -0.081 | 0.102 | 0.905 | 2.358 |
| | (0.005) | (0.036) | (0.079) | (0.133) | | |
| IND | 0.009 | 0.856*** | 0.075 | -0.162** | 0.918 | 2.46 |
| | (0.003) | (0.023) | (0.049) | (0.083) | | |
| PLN | -0.003 | 0.910*** | -0.133 | 0.166 | 0.673 | 2.19 |
| | (0.008) | (0.055) | (0.119) | (0.201) | | |
| PRP | -0.005 | 1.067*** | 0.081 | -0.132 | 0.769 | 1.937 |
| | (0.008) | (0.055) | (0.119) | (0.200) | | |
| SER | 0.001 | 1.041*** | 0.034 | -0.092 | 0.972 | 2.056 |
| | (0.002) | (0.015) | (0.034) | (0.057) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| MIN | 0.005<br>(0.014) | 1.341***<br>(0.096) | 0.05<br>(0.207) | -0.235<br>(0.350) | 0.605 | 2.173 |

*Notes:* Numbers in parentheses are standard errors. *** and ** denote significant at 1% and 5% levels.

This relationship may have connection with the characteristics of the industrial (IND) sector. Among the basic characteristics of the IND sector are; requirement of large capital, sophisticated technology and skilled labors. The industries categorized under this sector consist of cement plant, hot steel and rod iron, national car project, small engine and engineering complexes.

These industries heavily depend on oil in their operation and manufacturing processes. Therefore, the event of oil price increase causes the operating cost to go up. This in turn reduces the profit size or the asset earnings on investment. This explanation justifies the negative asymmetric exposure of oil price shocks to the IND returns.

## Conclusion and Recommendation

The estimated results from Test 1 show all sectors document insignificant results. These findings signify that the stock returns are not exposed to oil price shocks. The estimated results of Test 2 indicate the presence of one significant $q_2$ coefficient, which is detected in the analysis of industrial (IND) sector only. In particular, the returns of the IND sector are negatively exposed to change in world oil price (Poil), and it is more significant during periods of oil price increase. In other word, the event of world oil price increase, it significantly reduces the returns of the IND sector. The negative exposure of world oil price to IND returns may have to do with the characteristics of the IND sector which mainly requires large capital stock, sophisticated technology and skilled labors. Industries categorized under this sector appear to heavily depend on oil in their operations and manufacturing processes. This information provides indication that the IND sector is an oil dependent industry and is vulnerable to oil price shocks.

### A. Policy Recommendation

Based on the findings, the current section overviews alternative policy implementations that can be executed by the government to either improve or maintain the positive impact, and to either offset or overcome the possible negative impact of oil price changes. The overall findings of this study provide evidence that the industrial (IND) sector is negatively exposed to shocks in world oil price. This finding indicates that the critical sector that the government should focus on in the event of world oil price increase is the IND sector. There are a number of alternative course of actions that can be executed by the government to help ease the problem. One way to reduce oil dependency level is through promoting the usage of bio-fuels i.e., bio-mass oil, or other alternatives to fuel i.e. natural gas vehicle (NGV), to replace the fossil oil. This action helps to diversify the oil products which would further reduce dependence on a single fuel source. Other than reducing oil dependency level, the government may also focus on energy saving or conservation strategy in the effort to mitigate the negative impact of oil price increase. Energy saving or conservation for all oil dependent industries can be realized through promoting the usage of efficient machineries or cost effective energy technologies (EE) in the production processes. This can be done through two methods; i) by introducing tax credits to convert plants either to produce or to replace plant with more efficient machineries, and ii) by creating an X-prize style program to promote production or usage of EE machineries or technologies. In particular, the government offers prizes and recognitions for companies that develop, use or sell technologies that meet the EE criteria. Besides, the government may also want to implement feebates[9] program, which reward sectors that have reached EE standard. Combinations of more efficient machines and technology empowered by bio-fuels lead us straight to the road to energy independence.

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[9] Feebates assess a rebate or fee on the sale price of a new vehicle/industrial machine and are reflected immediately in the selling price. Buyers who purchase fuel-efficient vehicles/machineries will see a rebate, while purchasers of less-efficient vehicles/machineries will pay a fee.

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## Appendicies

**APPENDIX I** Total Petroleum Subsidies and Revenue Lost, 2001-2005 (RM Billion)

| | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|
| Subsidy | 2.40 | 0.92 | 1.82 | 4.79 | 7.11 |
| Revenue lost | 5.08 | 3.31 | 4.76 | 7.15 | 7.85 |
| Total | 7.48 | 4.23 | 6.58 | 11.94 | 14.96 |

Source : EPU (2005)

| Effective dates | Ron 92-Petrol (RM/Liter) | | |
|---|---|---|---|
| | Peninsular | Sabah | Sarawak |
| 1991.1 | 1.060 | 1.060 | 1.060 |
| 2000.10 | 1.160 | 1.160 | 1.160 |
| 2001.10 | 1.260 | 1.260 | 1.260 |
| 2001.11 | 1.260 | 1.260 | 1.260 |
| 2002.5 | 1.280 | 1.280 | 1.280 |
| 2002.11 | 1.290 | 1.290 | 1.290 |
| 2003.3 | 1.310 | 1.310 | 1.310 |
| 2004.5 | 1.330 | 1.330 | 1.330 |
| 2004.10 | 1.380 | 1.380 | 1.380 |
| 2005.5 | 1.480 | 1.480 | 1.480 |
| 2005.7 | 1.580 | 1.580 | 1.580 |

Source : EPU (2005)