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WORLD OIL PRICES AND ECONOMIC GROWTH: CASE OF MALAYSIA

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ABSTRACT

Since the early age, oil price has been influenced by many events - World War One, then came the World War Two. Not forgetting the Yom Kippur War that started with an attack on Israel by Syria and Egypt on 5th October, 1973 while the crisis in Iran and Iraq led to another round of crude oil price increases in 1979 and 1980. Many events lately contribute to the rise of world oil prices. With the September 11 attack and crisis of US on Iraq, world is facing a big turnaround and this situation does not seem to reach the end. Malaysia has been experiencing increases in petrol price, diesel and LPG dramatically. This led to mixed reactions among Malaysian economist, companies, businesses and individuals. The continuous raising of the price is worrying everybody. The major question is that will it have an impact on Malaysian economic performance. The main objective of this study is to examine the impact of world oil price changes on Malaysian economic performance using multiple regression analysis on seven variables over the 60 months period starting from year 2003 to 2007. The variables used are inflation rate and Industrial Production Index; as dependent variables; interest rate, world oil price, oil export, net export, Bursa Malaysia Composite Index and Lagged Industrial Production Index; as independent variables. Two models are formed from these variables. The results show that Industrial Production has significant relationship with the dependent variables. However, variables net export is dropped from the model due to the multicollinearity problem and the model is regressed again. Inflation rate also has significant relationship with the dependent variables.

Keyword (s): Oil Price, Economic Growth, Industrial Production Index

INTRODUCTION

OPEC has seldom been effective at controlling prices and OPEC had mixed success at controlling prices. There were mistakes in timing of quota changes as well as the usual problems in maintaining production discipline among its member countries. The oil price issue has been discovered since a long time ago and it is seen as a continuous problem. This continuous high price also resulted in increased exploration and production outside of OPEC. From 1980 to 1986 non-OPEC production increased 10 MMBPD (Million Barrels of Oil Per Day). OPEC was faced with lower demand and higher supply from outside the organization. The price increases came to a rapid end when the impact of the economic crisis in Asia was either ignored or severely underestimated by OPEC. Many events contribute to the rise of world oil price. With the September 11 and the crisis of US on Iraq, the world is facing a big turnaround and this situation is not getting any better.

Lately, Malaysia has been experiencing up and down in petrol price, diesel and LPG dramatically. This led to mixed reactions among Malaysian economist, companies, businesses and individuals. The continuous raising of the price is worrying everybody. After a detailed review, seven variables; Inflation rate (INF), Industrial Production Index (IPI), Lagged Industrial Production Index$_{t-1}$ (IPI$_{t-1}$), interest rate (IR), oil export (OE), net export (NE) and Bursa Malaysia Composite Index (CI) are selected as guidelines to reveal and test the relationship, if any, between the world oil price changes on these variables.

This study will provide important information and policy implication to the Malaysian investors, firms and government. It will guide researcher to determine whether there is a correlation on inflation rate (INF), industrial production index (IPI), interest rate (IR), oil export (OE), net export (NE) and Bursa Malaysia composite index (CI) due to changes in world oil price (OP). Next, the content of this study will provide information as far as the effect of world OP is concerned. Other than that, it can also help the Malaysian government to develop alternative strategies to position their place in the future based on the finding and estimated result from the analyzed data. This study is also useful in providing the information

about world OP and its importance on the INF and IPI. Last but not least, it will give insight to public to understand the current economic condition due to world OP changes.

Organization of Petroleum Exporting Countries (OPEC)

OPEC was formed in 1960 with five founding members Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. OPEC stands for Organization of Petroleum Exporting Countries. By the end of 1971 six other nations had joined the group; Qatar, Indonesia, Libya, United Arab Emirates, Algeria and Nigeria. From the foundation of the Organization of Petroleum Exporting Countries member countries experienced steady decline in the purchasing power of a barrel of oil. OPEC had its headquarters in Geneva, Switzerland, in the first five years of its existence. This was moved to Vienna, Austria, on 1st September 1965.

OPEC's objective is to co-ordinate and unify petroleum policies among member countries, in order to secure fair and stable prices for petroleum producers; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the industry. After 1975, the interests of OPEC and the majors coincided where both wished to see a large volume of oil flow through to consumers at high prices. OPEC tries to keep oil prices (OP) high by keeping production within limits, assigning a production quota to each member.

The OPEC member countries coordinate their oil production policies in order to help stabilize the oil market and to help oil producers achieve a reasonable rate of return on their investments. This policy is also designed to ensure that oil consumers continue to receive stable supplies of oil. (OPEC Website)

The History of Oil Price (OP) Movement

Crude OP behaves much as any other commodity with wide price swings in times of shortage or oversupply. The crude OP cycle may extend over several years responding to changes in demand as well as OPEC and non-OPEC (NOPEC) supply. Throughout the twenty first century, but particularly since the mid-1970s, much of the discussion of developments in primary commodity markets has focused on demand, supply and price of oil. Some have tried to see if there is a connection to globalization and economic performance in poor, developing and advanced countries. The price of oil in recent years has continued to be highly volatile over short periods. It is seen to repeat the pattern of the period from the "first oil shock" in 1973 through the Iraq-Kuwait conflict in 1990-91.

During the post world war II (pre embargo war), crude OP only ranged between $2.50 and $3.00 from 1948 through the end of the 1960s. When the Yom Kippur War (Arab oil embargo) occurred in 1973, the extreme sensitivity of prices to supply shortages became all too apparent when prices increased 400 percent within six short months. Then in 1979 and 1980, crises in Iran and Iraq led to another round of crude OP increases. It doubled from $14 in 1978 to $35 per barrel in 1981. This became worse with the failure of OPEC to control the crude OP. (WTRG Economics, 2004).

Malaysian Petroleum Industry

According to the history of Miri, the earliest officially recorded oil find in Malaysia was made in July 1882 by the British Resident of the Baram district in Sarawak. The oil was used by the local residents for medicinal purposes and later for lighting lamps and waterproofing boats. Commercial exploitation only began in 1910 when the Anglo-Saxon Petroleum Company, the forerunner of the present Sarawak Shell, which was granted the sole right to explore for petroleum in Sarawak, struck oil in the town of Miri, marking the start of the Malaysian petroleum industry. The Miri success encouraged with further attempts to discover other onshore fields. However, only traces of petroleum were found, and these were not large enough to justify drilling activities. (miricity.com.my, 2008).

Consequently, by the 1950s, attention turned to the seas. This was made possible by new improvements in offshore petroleum technology. Marine seismic surveys were carried out for the first time in Sarawak in 1954. The shift offshore began to show results in 1962 with the discovery of oil in two areas offshore Sarawak. Other finds followed in rapid succession. In Peninsular Malaysia, petroleum exploration activities began in 1968 and the first oil field was discovered in 1971. (miricity.com.my, 2008).

As in many other developing countries, oil companies in Malaysia had been operating under what was known as a concession system. Under this system, large areas were made available to oil companies

under very generous terms and the Government retained very little control. In return for these concessions, the oil companies paid a small royalty and taxes to the Government.

Malaysia has the 24th largest crude oil reserves and the 13th largest gas reserves in the world. If combined, Malaysia has total domestic reserves of 19.345 billion barrels of oil equivalent; 75 percent of gas and 25 percent of oil. As at 1 January 2005, Malaysia's crude oil reserves (including condensates) stood at 4.841 billion barrels and natural gas reserves stood at 87tcf. Gas reserves remain three times the size of oil reserves. (MIDA, 2005)

LITERATURE REVIEW

Formal theorizing about the long run behavior of agricultural commodity prices started with David Ricardo, who predicted that, in the absence of a sufficiently high rate of technical progress and with positive population growth, commodity prices tend to increase over time. In contrast with the classical view, the influential papers by Prebisch (1950) and Singer (1950) pointed to a downward trend in the price of raw materials and commodity prices, relative to industrial products.

According to Alhaji (2001) in his article to assess the effects of the low oil prices the world experienced in 1980s, 1998 and early 1999, in most oil producing countries, economic growth is highly correlated with oil prices. Higher OP is accompanied by high economic growth in the same manner that low OP is associated with low economic growth.

Oil Price and Economic Growth

Nunnenkamp (1982) in his paper on "The Impact of Rising OP on Economic Growth in Developing Countries in the Seventies", explained that according to a widespread impression it is especially in the non-oil developing countries where economic prospects have been negatively affected by the two OP shocks of 1973/74 and 1979/80. Although the situation of the early seventies was rather unfavorable for NOPECs confronted with quadrupling OP and other external shocks, their growth performance hardly worsened. For net oil importing NOPECs it was only in 1975 (4.3 percent) and 1979 (4.1 percent) that real Gross Domestic Product (GDP) increases were considerably smaller than the average growth rate of nearly 6 percent in the 1967-1972 period. For the industrial countries, on the contrary, the average GDP increases of 2.5 percent following the first OP shocks was only half the growth rate experienced in the sixties and early seventies.

A test by Nunnenkamp (1982) showed that the result indicates that negative growth effects of rising OP were rather limited. In time for non oil developing countries or even restricted to a once-for-all loss in GDP caused by the deterioration in terms of trade in 1974. Contrary to the stated hypothesis, the impact of the oil crisis of 1973/74 was insignificant in the longer run. At most, it is the already industrialized NOPECs, which have to be exempted from this statement. As the importance of this industry in Third World economics will further increase, in a growing number of countries reaching a level comparable to those prevailing in developed countries, the influence of relative OP may become more distinct in the future, those depending on the patterns of industrialization, and above all, the chosen factors intensities.

Bernanke, Gertler and Watson (1997) argue that OP shocks create a monetary response that may or not exacerbate the effects of an oil supply shock. Thus, the response of the economy to an oil shock depends on the response of the monetary authorities, of the key IR (Federal Fund rate) is allowed to increase after a rise in the price of oil, a reduction in GDP should result. However, if the monetary authority keeps IR unchanged, the oil shock does not result in an increase in GDP. This is according to their paper of "System Monetary Policy and the Effects of OP shocks".

Alhajji (2001) reports in his article in attempting to assess the effect of the low oil prices that in most oil-producing countries, economic growth is highly correlated with oil prices. Higher oil prices are accompanied by high economic growth in the same manner that low oil price are associated with low economic growth.

In a report on development in theoretical and empirical understanding of the macroeconomic consequences of OP shocks since 1996, Jones, Leiby and Paik (2001) have stated that several studies have touched on IR and even have suggested IR as channel for OP shocks to influence GDP (e.g., Ferderer, 1996, Hooker, 1996c, 1999). This study mentioned that the impulse response functions (IRF) showed a

strongly asymmetric response of the short-term IR to positive and negative OP shocks and a modestly asymmetric response of the long-term rate. Both IR and the federal funds rate are significant in the GDP equation. They conclude that from these findings that an OP shock works primarily through IR. Early in the post- 1973 era, observers noted that monetary policy had changed about the same time as the oil shock occurred and raised the question of how much of the post-shock business cycle was attributable to each. Until recently, the most substantial controls for monetary policy in empirical investigations were the use of monetary or IR variables in regressions of GDP or unemployment on OP. These specifications were unable to account satisfactorily for the possibility that the changes in monetary policy were endogenous responses to the OP shocks. OP shocks account for 60 percent of the business cycle fluctuation, in contrast to 16 percent Kim and Loungani (1992) found for the US in their closed-economy RBC model, which allowed the IR to move.

Hooker's (1999) examination of the stability of the oil price-GDP relationship over the period 1954-1995 considered bivariate and multivariate vector autoregression (VAR) specifications. Including an IR variable in the post-1979 subsample eliminated the significance of the OP variables, and Hooker inferred that OP was operating indirectly on GDP through monetary policy in this later period. Thus, while OP directly affected GDP in the pre-1980 period, after 1980, they appear to have operated through their influence on monetary policy and possibly other indirect channels. The statistical significance of oil shock variables in the presence of IR variables is restored when 3-year Net Oil Price Increase (NOPI) specification of the OP shock is used.

Hooker's (2000) independent findings in his paper titled "Are Oil Shocks Inflationary? Asymmetric and Nonlinear Specification versus Changes in Regime" that the federal funds rate became less sensitive to OP changes at precisely the time when the systematic monetary policy hypothesis would require it to have become more sensitive adds strength to the H&H conclusions. And, as several authors have pointed out, faced with an OP shock, the Fed has an unattractive menu of choices between inflation and a dip in GDP.

Huntington (1999) explained that shifts in short-run aggregate supply and demand curves push IR and prices upward while retarding economic growth, in a paper of "Crude Oil Prices and US Economic Performance: Where Does the Asymmetry Reside?".

In a study of "The Impact of Rising Oil Prices on Economic Growth in Developing Countries in the Seventies" by Nunnenkamp (2001), he found that a high degree of world market orientation might help the NOPECs to adjust to the OP shock, either by expanding export volumes or by taking advantage of higher world market prices for their products.

Based on the article conducted by Alhaji (2001) titled "What Have We Learned from the Experience of Low Oil Prices?", many oil-producing countries are dependent on oil as the only source of income and foreign exchange. The article shows fuel exports as a percentage of total exports of selected oil-producing countries. Lower OP mean less revenue, budget deficits and cuts in social programs and other projects that are vital for economic development. Alhaji (2001) also explained that most oil-producing countries' export revenue declined substantially, especially in the second half of 1998. As a result, trade deficits increased for countries where deficit already exist, while trade surpluses declined in countries with positive trade balances. For example, Indonesia slashed its trade surplus by more than half in 1987. The samples net export (NE) versus OP between 1980 and 1998 for three oil-producing countries in three continents: Saudi Arabia, Nigeria and Venezuela. All these countries suffered a trade deficit in the mid-1980s. The trade balances deteriorated in 1998 and Saudi Arabia suffered its first decline since 1993, while the trade balances of Nigeria and Venezuela also became negative.

Most of the microeconomic research on the mechanism by which OP shocks operate has focused on either product or labor markets. Research on reallocative effects of OP shocks in capital markets has lagged behind. The closest that microeconomic research on OP has come to focusing on capital markets has been several studies of stock market indexes (Kaul and Seyhun, 1990 : Jones and Kaul, 1996 : Sadorsky, 1999) and a single study of individual firm's stock prices (Sakellaris, 1997). Ideally, stock values reflect the market's best estimate of the future profitability of firms, so the effect of OP shocks on the stock market is a meaningful and useful measure of their economic impact. Since asset prices are the present discounted value of the future net earnings of firms, both he current and the expected future impacts of an OP shock should be absorbed fairly quickly into stock prices and returns, without having to wait for those impacts to actually occur.

Inflation Rate and Economic Growth

Dotsey (1998) explained in his paper titled "Often When There is an Increase in Expected Inflation", as depicted by a steepening of the yield curve, the Fed engages in contractionary monetary policy by increasing short-term rates. In many of these episodes the long rate also initially rises, but not by as much as the short rate, and the spread narrows. Subsequently, as inflationary expectations subside, the long rate often falls and the yield curve inverts. The result of the monetary tightening is often a recession. Correspondingly, when economic activity is weak, the Fed often loosens monetary policy by decreasing the short IR. This action generally causes the yield curve to steepen, and if an increase in inflationary expectations results from the easing, the yield curve may steepen substantially. Monetary easing often results in an increase in economic growth. Thus the result of easy monetary policy is often a steepening of the yield curve and increased economic activity. If these were the only reasons that movements in the spread were associated with economic activity, then adequately capturing the stance of monetary policy would leave little additional explanatory power for the spread in forecasting economic growth.

Oil Price and Inflation Rate

In a study of "Oil Price Movement and Globalization: Is there a Connection?" done by Looney (2002), OP shocks may impact indirectly through slowing down the growth of major external markets. Even oil booms may have an adverse effect on oil-producing countries through the Dutch disease mechanism; an overvalued exchange rate, increased domestic inflation and a shift to non-trade activities. However, given the Dutch disease effect is a longer term phenomenon, it is safe to conclude that, at least in the case of oil producers, the short-run effect of an OP increase would be positive (Looney, 1990).

According to Bush (2005) in his article titled "The Curse of $50 a Barrel: Why Steep Oil Prices Could Prove catastrophic for Russia's Economy", rising costs will exacerbate one other well-known ailment associated with high OP. As well as pushing up the value of the currency directly, a flood of petrodollars may also undermine manufacturing competitiveness by stroking inflation. As indicated by Borensztein and Reinhart (1944), commodity markets and prices have a nontrivial role in transmitting business cycles disturbances and in influencing inflation rate (INF) in industrial countries. The low prices would increase the dependence on oil and subsequently increase dependence on imports and jeopardize national security and economic stability. However, it can help the world economy grow faster at a faster rate.

Based on a paper titled "Crude Oil Prices and US Economic Performance: Where Does the Asymmetry Reside?", OP shocks have also had significant effects on wages and prices throughout the economy. It is important to consider these inflationary pressures as well, because policies for mitigating the output impacts will often worsen the price impacts. Inflationary fears led many countries away from trying to accommodate past oil shocks (Huntington, 1999).

As indicated by Borensztein and Reinhart (1944), commodity markets and prices have a non-trivial role in transmitting business cycle disturbances and in influencing INF in industrial countries.

In an alternative focus on the influence of OP on the macro economy, Hooker (2000) studies the influence of OP on core inflation. Paralleling the structural break he found in the oil price-GDP relationship around 1980, he identified a break in the US Phillips curve relationship, augmented with OP around the same time with OP changes making a substantial contribution to core inflation before that date but little or none thereafter.

Based on the economic review in the first quarter of 2005 conducted by Public Bank Malaysia, high OP, hovering at around US$60 per barrel and the general rise in INF and IR are dampening the world economic growth. In April 2005, the International Monetary Fund (IMF) projected the global to slow down from a rapid 5.1 percent in 2004 to 4.3 percent in 2005. Given the persistently high OP, the dismal growth in Europe and to a lesser degree Japan, the global growth may well be lower than IMF's projections. Although the US economy was still growing at a steady pace of 3.8 percent in first quarter of 2005, high OP and rising IR could eventually impede growth. To keep inflation in check, the Fed went on to raise IR for the ninth time since June 2004 to 3.25 percent in late June 2005.

The persistently high OP will shave off some percentage points from the global economy. Inflationary pressures are building up and this will result in higher INF and would also lead to higher IR. Although the hike in retail petrol prices has led to higher domestic inflation, what's more worrisome is the worldwide impact of higher OP.

During the third and the most recent oil shocks, the effect of high OP on inflation was less devastating compared to that of the earlier shocks. In the US, the CPI on average peaked only 5.4 percent in 1990 and at 3.4 percent in 2000. In the UK, the average CPI peaked at 9.5 percent in 1990 and then subdued substantially after 1992. During the most recent shock, the increase in consumer inflation in the UK was not an issue. Despite the OP hikes, the situation was different was different in Japan as the Japanese economy entered into a deflationary period late in 1990s. (Economic Review, 2005).

Industrial Production Index and Economic Growth

In a paper written by Malaysian Institute Economic Research (MIER) about the performance of Malaysian economy, the Industrial Production Index (IPI) had slowed drastically in May 2005, the first decline in three years. Industrial output showed a small contraction of –0.4 percent in May 2005, with the manufacturing index remaining almost flat (+0.2%). This implies that GDP growth would possibly slow markedly in the second and third quarter. Given the rebound in export and import growth, the decline in the IPI is expected to be temporary. It is unclear when output growth will pick up speed again. This will probably depend on the recovery in the electronics sector, which has not shown any signs of recovery yet. Indications are that the slowdown was due to the softening in export-oriented industries, in line with the slowdown in the global economy. Electronics output had declined in sync with the down cycle in the global electronics market. Domestic-oriented industries have remained quite steady with strong growth particularly evident in the transport equipment sub-sector. The slump in the construction sector is reflected by the negative growth in output of non-metallic mineral products and basic metals. During the first five months of 2005, the IPI expanded by 3.9 percent, much slower than the 14.0 percent growth during the corresponding period last year.

Based on a paper reports on developments in theoretical and empirical understanding of the macroeconomic consequences of OP shocks since 1996 by Jones, Leiby and Paik (2001), the effects on industrial production are larger than when OP are denominated in national currencies than in US dollars, presumably the result of exchange rate effects.

Interest Rate and Economic Growth

One article that supports using the spread alone in predicting economic growth by Estrella and Hardouvelis (1991) examined data over the period 1955 to 1988. They document that the spread between the yield on the ten years Treasury bond and the three months Treasury bill is a useful predictor of both cumulative economic growth up to four years in the future and marginal economic growth rates up to seven quarters in the future. They also find that the spread contains information for future economic growth not already embodied in the current level of real IR, in current economic growth, in the current growth rate of the index of leading economic indicators, or in the INF. Further, they find the spread useful in forecasting the probability of a recession. An important implication of this article is its rule of thumb applicability. By concentrating largely on the spread's predictive content, the article's forecasting message is easy to apply and doesn't require sophisticated econometric tools or the application of large economic data sets.

Oil Export and Economic Growth

In an economic review conducted by the Public Bank Malaysia, nonetheless, being a net oil exporter, the rise in OP has actually helped cushion part of the slack. The leading index has stabilized somewhat, indicative of a modest growth pace into the next one or two quarters.

Hirschman (1958) stated in his study of "Strategy of Economic Development" that export contributes to economic growth directly through direct contributions to GDP and indirectly through contribution to GDP per medium of spread (or carry over) effects. The indirect contribution to growth embraces HIRSCHMAN-type linkages and can broadly be considered as a sequence of multiplier-accelerator mechanism.

Metwally and Tamaschke (1980) explained in their study of "Oil Export and the Economic Growth in the Middle East", the overall impact of an export stimulus on the economy has many determinants including technology, the propensity to import, the extent to which investment opportunities generated are accepted domestically, the ability to attract foreign factors and so on. Obviously, neither the timing pattern exhibited by, nor the relatives size of, exports' direct and indirect contributions to growth

need to be fixed and could conceivable vary between sub periods, especially over longer period of economic development. In addition, it may be argued that oil export (OE) and the income of the exporters are interrelated simultaneously. An increase in exports results in an increase in incomes. However, as incomes rise, the demand for import will increase. The increase in imports represents an increase in the incomes of those countries, which export the goods and services to the oil producers. This rise in the income of the rest of the world will in turn stimulate the demand for oil and this will result in an increase in the exports of the oil producers.

According to a study done by Looney, 2002 about "Oil Price Movements and Globalization: Is There a Connection?", it has often been noted that in recent years that natural resources-rich economies have faired particularly badly, especially in comparison with many of the resource-scarce economies. Even oil booms may have an adverse effect on oil-producing countries through the Dutch disease mechanism- an overvalued exchange rate, increased domestic inflation and shift to non-trade activities. However, given the Dutch disease effect is a longer-term phenomenon, it is probably safe to conclude that, at least in the case of oil producers, the short-run effect of an OP increase would be positive.

Hamilton (1983) in his study explained an inverse relationship between OP and aggregate economic activity in the US. There are several channels through which the effect of OP on the economy can be motivated. The more plausible channel is the classic supply effect, in which an increase in the strategic input price tends to reduce output and raise the price level. An improvement in the terms of trade in favor of oil exporters can result in transferring income from oil importers, thus reducing aggregate demand and the level of economic activity.

Net Export and Economic Growth

In an article concerned with the empirical link between exports and economic growth by Subasat (2002), he said that the 1980s and 1990s saw a remarkable increase in trade associated with an unprecedented wave of trade liberalization, with most countries, developed and developing, increasing their trade relative to GDP. The relationship between trade and economic development, however, remains controversial. Although the benefits of free trade are endorsed by mainstream economics and exports are seen as engine of growth, a large body of empirical literature regarding the impact of trade policies on economic performance has produced mixed results. And although the bulk of empirical work (Balassa, 1978, 1985; Dollar, 1991; Fajana, 1979; Feder, 1983, 1985; Heller and Porter, 1978; Moschos, 1989; Ram, 1985, 1987; Salvatore and Hatcher, 1991; Tyler, 1981; Voivodas, 1973; and Williamson, 1978) has indeed been supportive of the export-led development hypothesis, some recent literature (Dodaro, 1991, 1993; Evans and Alizadeh, 1984; Helleiner, 1986; Jung and Marshall, 1985; Levine and Renelt, 1992; Pack, 1992, 1988; Schmidt, 1984; Sheehey, 1990; Timmer, 1988; Westphall, 1978; Yaghmanian, 1994) has contested these findings.

Subasat (2002) explained in his article titled "Does Export Promotion Increase Economic Growth? Some Cross-evidence Evidence" that another important facet in the relationship between exports growth and economic is causality. A strong correlation proves neither the existence of causality between the two variables, nor, if there is causality, that it runs from export to economic growth. Most empirical studies, explicitly or implicitly, assume that causality runs from exports to economic growth. As Jung and Marshall (1985) have pointed out, there are several reasons why one should expect export growth to stimulate economic growth; firs, exports growth may represent an increase in demand for the country's output and thus serve to increase real Gross National Product (GNP). Second, an increase in exports may loosen a binding foreign exchange constraint and allow increases in productive intermediate imports and hence result in the growth of output. Third, export growth may result in enhanced efficiency and thus may lead to greater output.

World Bank researchers are also aware that the links between trade strategy and macroeconomic performance are not entirely clear and raise the question of whether outward orientation lead to better economic performance or superior economic performance paves the way for outward orientation. This has been analyzed by Subasat (2002) in his article.

According to Pack (1992) in his research of "Industrialisation and Trade", economic development tends to stimulate exports at the earlier stages of development, whereas exports tend to stimulate economic development after some degree of development is attained. It is argued that growth rates are not necessarily determined by exports, but by processes that are independent of trade policy. Subasat (2002) in his article examined that the strong correspondence between levels of development and trade policy orientation suggests that export performance is related to the level of development. As development takes place, the

economy become stronger, markets become more efficient and fewer bottlenecks occur. Thus, Yaghmanian (1994) investigation on exports, development and growth in developing countries argues that, both economic growth and successful export performance are determined by processes of development and structural change. Exports, and the growth rate of GDP, may or may not reinforce each other. But, as countries become more developed, they are more likely to 'get the price right', and in so doing to follow a more neutral policy stance both with respect to exports and domestic economy.

While Jung and Marshall (1895) contend in their study about "Exports, Growth and Causality in Developing Countries" that, even if it is true export growth can cause economic growth, it is equally plausible that economic growth may in turn, cause exports growth. For example, in the case of unbalanced growth, it is highly unlikely that the domestic demand for goods from expanding industries will grow as rapidly as their production. Therefore, producers will be forced to seek out foreign markets in which to sell their commodities.

Based on the economic review on Malaysia's performance conducted by the Public Bank Malaysia, the small decline in industrial output in May 2005 is a cause for concern, suggesting that the Malaysian economy would slide into a soft patch in the second and third quarter. Export growth has moderated as well, in line with the slow down in the global economy and the down-cycle in the electronics sector.

The IPI measure in manufacturing, mining and electricity tends to be more volatile than export due to anticipation of future orders. According to an article written by Maisara (2004) titled "IPI Hits Double-digit Growth in June, Below Market Expectations", Malaysia's exports in June had surged 22.2 percent while imports grew 38.4 percent, amid a recovery in a global electronics demand. An economist from Malaysian Industrial Development Finance Berhad (MIDF) added, the pace of production in the second half should moderate along with the softer pace of exports, but the IPI trend will continue to be up, riding on still robust demand for semi-conductor.

Maybank Securities analyses whether the 2.9 percent year-on-year growth in the IPI is an anomaly or whether it will set the tone this year (2005). They examined, in 2003 January's IPI dropped around 6 point compared to the previous month. However, in 2004, January's IPI dropped 13 points compared to previous month. There were two public holidays in January 2004, but that was similar to 2003. However, exports had slowed down to 11.3 percent year-on-year in January, the slowest in 14 months.

Ndulu and Ndungu (1998) in his research on "Trade and Growth in Africa" examines that there are number of ways that rapid expansion in exports and outward orientation can contribute to increased economic growth. Exports growth may lead to an increase in the scope for economies of scale due to an enlargement of the market size and encourage allocative efficiency and competitiveness of exporting firms. If there were incentives to increase investment and improve technology, this would imply a productivity differential in favor of the export sector. Hence, if the sector expands at the expense sectors, a positive effect will be impacted on aggregate output.

Based on the Kruger (1984) study on "Comparative Advantage and Development Policy Twenty Years Later", the significance of exports in economic growth has also been buttressed by the literature on endogenous growth theory which spells out the importance of increasing returns to scale and the dynamic spell over impact of the export sector's growth. According to this theory, exports may increase long run growth by allowing the economy to specialize in those sectors with scale economies that arise from research and development, human capital accumulation, or learning-by-doing. The non-export sector could also benefit from positive externalities such as improved management styles and more efficient production technologies generated by the export sector through increased trade.

Composite Index and Economic Growth

Kaul and Seyhun (1990:K&S) have conducted a paper about "Relative Price Variability, Real Shocks and the Stock Market", they examined the influence of the volatility of OP on rates of return to assets listed on New York Stock Exchange (NYSE) over 1949-1984 annually. Their regression coefficients on inflation variables were insignificant, the OP coefficient was negative and significant (in the 1966-84 subperiod) and that on industrial production was positive and significant.

While Jones and Kaul (1996) in their research titled "Oil and the Stock Market", constructed a standard cash flow/dividend valuation model to examine stock market efficiency (whether stock price changes reflect current and future real cash flow), focusing their test on the extent to which stock prices also change in response to OP changes. When industrial production is included as a cash flow variable, the

results are expected by the theory of rational valuation: stock prices change to reflect the exact change in expected future cash flows and future returns of the underlying assets, the coefficient on cash flows are positive and significant and those on OP jointly zero for the US and Canada. Excluding cash flow variable from the valuation regression yields negative and significant OP coefficient and OP Granger-precede indexes of stock returns and output. These result shows that stock prices rationally reflect oil shocks through their effects on cash flows and highlight the importance of the industrial production and cash flow route for OP effects on the stock market.

RESEARCH METHODOLOGY

The main purpose of this study is to analyze the effect of world oil price (OP) changes on Malaysian economic performance. In particular this study analyzes the impact of world OP changes on the Malaysian IPI, examines whether the increase in the world OP causes inflation in Malaysia and compares the effect from the world OP on the IPI with those from the other factors, namely, IR, OE, NE, CI and IPI_{t-1}. In the end, it would help the Malaysian government to develop alternative strategies to position their place in the future. Other than that it can provide information about world OP and its importance on the macroeconomic indicators and to give insight to public to understand the current economic condition due to world OP changes.

Data Collection

This study examines the relationship of eight chosen variables covers a period of 51 months from January 2003 to December 2007. This time period allows the researcher to have a better insight of the effect of world OP on the Malaysia economic performance. In collecting data, there are two types of sources that can be used; primary data and secondary data. Primary data is collected by distributing questionnaires to respondents. In this study, it is more practical to use secondary data. The secondary data are gathered and recorded by someone else prior to current needs of the researcher. They are usually historical, already assemble and do not require access to respondents or subjects. All the data required were gathered from a few sources which completed the whole set of data from January 2003 to December 2007. The specific sources are:

a. Bank Negara Monthly Bulletin.
b. OPEC Monthly Bulletin.
c. Buletin Siaran Perangkaan Bulanan Malaysia.
d. There are also sources from various books, journals and articles that have been useful to analyze previous study and in developing the theoretical base of this study.

Research Variables

There are eight variables used in this study; inflation rate (INF) and Industrial Production Index (IPI) are the dependent variables while the six independent variables used are world OP, interest rate (IR), oil export (OE), net export (NE), Bursa Malaysia Composite Index (CI) and Industrial Production $Index_{t-1}$ (IPI_{t-1}).
The models that researcher used show the relationship between the independent variables and independent variables. First, researcher would like to see if the changes in world OP have impact on the INF. Secondly, if the world OP affects the IPI. If not, which other variables would affect the IPI; IR, OE, NE, CI or IPI_{t-1}.

METHODOLOGY

This study will use SPSS program as analytical tool to translate the data into a meaningful result. The method chosen is Multivariate Analysis where it allows simultaneous investigation of more than two variables. The investigation is done on the relationship of INF and IPI as dependent variables while the independent variables are world OP, IR, OE, NE, CI and IPI_{t-1}. Using Multiple Linear Regression, these tests are carried out prior to the data collection:

a. Multicollinearity
b. Multiple Correlation of Coefficient = R
c. Coefficient of Determination = R^2
d. Durbin Watson
e. F-test
f. t-test

Two (2) models have been developed according to variables studied in order to determine the real relationship as followed:

$$INF = a + \beta_1 \ln OP + \beta \ln IR + \beta \ln CI + \beta \ln IPI + u_i$$

$$IPI = a + \beta_1 \ln IR + \beta_2 \ln OP + \beta_3 \ln OE + \beta_4 \ln NE + \beta_5 \ln CI + \beta \ln IPI_{t-1} + u_i$$

Where

a = Constant
INF = Inflation Rate
OP = World oil price
IR = Interest Rate
OE = Oil Export
NE = Net Export
CI = Bursa Malaysia Composite Index
IPI = Industrial Production Index
IPI_{t-1} = Lagged Industrial Production Index
u = Error term

FINDINGS AND ESTIMATED RESULTS

Multicollinearity

Based on table 1, it is found that there are only two high linear relationships. NE and CI have high linear relationship at 0.83. OE and IPI2 also have high linear relationship at 0.78. The other high linear relationship is CI and NE at 0.90. The world OP Variance Inflation Factor (VIF) value (5.764) shows that the correlation between the independent variables is too extreme and may be dealt with by dropping necessary variable(s) from the model. On the other hand, IR, OE, NE, CI and IPI_{t-1}, the VIF values are all less than 5; 3.101, 1.190, 4.464, 3.701 and 3.810 respectively. So, there is no multicollinearity problem for these variables.

Since there is extreme correlation, NE is dropped from the model. Based on table 2, IPI_{t-1} and CI have high linear relationship at 0.78. There is no more extreme correlation exists among the variables where the VIF values for IR is 3.097, OE is 1.096, world OP is 3.784 and CI is 3.444.

Based on table 3, it is found that there is only one high linear relationship. IPI and CI have high linear relationship at 0.70. The VIF values for world OP, IR, CI and are all less than 5; 3.684, 3.034, 3.473 and 3.558 respectively. So, multicollinearity is not considered a problem for these variables.

Multiple Correlation of Coefficient = R

According to table 4, the R value (0.950) shows positive correlation coefficient which indicates that high values of independent variables world OP, IR, OE, NE and CI tend to be associated with high values of dependent variable IPI and vice versa. From second regression, the R value is 0.947. This shows that the independent variables and dependant variables are positively correlated. This positive correlation coefficient indicates that high values of independent variables world OP, IR, OE and CI tend to be associated with high values of dependent variable IPI and vice versa. For the second model, R value (0.717) indicates that the independent variables and dependant variable are positively correlated. The high value world OP is associated with high value of INF and vice versa.

Coefficient of Determination = R^2

From table 4, the Adjusted R Square shows that INF is explained by the independent variables by 89.2%. The other 10.8% is explained by other unknown factors. From the second regression (after dropping NE as variable) the Adjusted R Square shows that the IPI is explained by the independent variables by 88.8%. The other 11.2% is explained by other unknown factors. From the second model, the Adjusted R Square shows that the INF is explained by the independent variables by 47.9%. The other 52.1% is explained by other unknown factors.

Durbin Watson

Based on table 4, the Durbin Watson value (1.803) indicates that there is no positive autocorrelation. Meanwhile, the second regression indicates that there is no negative correlation with the value of 2.954. From second model, the Durbin Watson value (1.672) indicates that there is no positive autocorrelation. Therefore, the model is acceptable for this study.

F-Test

Meanwhile from table 4, both regressions for model 1 is significant at 0.000 which means ipi is affected by the independent variables. Second model also shows significant result at 0.000 which means INF is affected by the independent variable. Both results accept the hypotheses alternative.

T-Test

Based on table 5 this test has five significant results out of ten hypotheses. The third hypothesis shows IPI is affected by the OE at 0.027 using 0.05 confidence interval. From second regression, it indicates that OE is also significant at 0.007 using 0.05 confidence interval. Therefore, hypotheses alternative accepted. This may be due to several major issues that happened to the world such as the failure of OPEC to control oil prices, military action in Iraq and 11th September terrorist attack. This research results support the findings made by MIER (2005).

The sixth hypothesis shows a significant relationship between IPI and IPI_{t-1} for both regression of model 1 at 0.000 using 0.05 confidence interval. Thus, hypotheses alternative is accepted and the Industrial Production Index is affected by the IPI_{t-1}. In other words, the effect of IPI does lag and the real impact can be seen after a year period.

The seventh hypothesis shows that the world OP is a good variable that explain the INF at 0.000 using 0.05 confidence interval, which brings to INF is affected by the world OP. Therefore H_a is accepted. This result is similar to the findings of Looney (1990), Bush (2005), Hungtinton (1999) and Economic Review (2005) but differ from Kaul & Seychun (1990).

Using 0.05 confidence interval the eight hypotheses shows a significant relationship between INF and IR at 0.019. Therefore hypotheses alternative is accepted which means that INF is affected by the IR. According to Quantity Theory of Money, the source of inflation is the increase in money supply and inflation can be controlled through money supply by controlling interest rate. This has been proven from the postwar period where in the United States and other countries this theory shows a long run average relationship among interest rates, inflation rates and money growth rates. This result is supported by the findings from Utami & Inanga (2009), Madura (2000), Cooray (2002), Peng (1995) and Crowder (2003).

The ninth hypothesis shows a significant relationship between INF and CI at 0.004 using 0.05 confidence interval. This result accepts the hypothesis alternative where INF is affected by CI.

CONCLUSIONS

The purpose of this study is to find out the impact of world OP changes on the Malaysian economic performance. The analysis covers a period of 60 months from 2003 to 2007 and eight variables; OP, inflation rate (INF), Industrial Production Index (IPI), Industrial Production Index $_{t-1}$ (IPI_{t-1}), interest rate (IR), oil export (OE), net export (NE) and Bursa Malaysia Composite Index (CI). This study used multiple regression analysis to find the estimated result. There are two models to be tested for this study. The dependent variables are INF and IPI. Meanwhile, the independent variables are world OP, IPI $_{t-1}$, IR, OE,

NE and CI. One model is regressed twice due to multicolinearity problem, where one variable was dropped from the models.

Based on the results from the first model, the first regression shows that IPI has significant relationship with IR, world OP, OE, NE, CI, IPI and IPI_{t-1}. Meanwhile, the second regression is regressed without NE. It also appears that there is a significant relationship between IPI and its independent variables. This means that any changes in these variables will influence the IPI. The OE and IPI_{t-1} have most significant impact on IPI. The government needs to maintain the stability of these factors, as it will determine the economic performance. However, since the OP is the main concern in the study, it would be a relief for the government because they do not have worry about its impact on the IPI. The oil export affects the IPI due to use of petroleum products in calculating the IPI for all divisions.

As for the second model, it appears to suggest that there is a significant relationship between INF with its independent variables. It means that any changes in these variables will definitely influence the INF. In comparison between the independent variables, world OP, IR and CI have most significant impact on the INF. Too much change might not be good news to Malaysia. World OP and IR relate directly to the inflation that explains the significant result.

In addition, government of Malaysia needs to pay close attention to the world OP, IR and CI changes because they would affect the INF significantly. However, government need not worry about the effect of world OP changes on the IPI because it has no significant impact. But, the OE and IPI_{t-1} should be monitored as they affect the IPI the most.

The lower oil prices can help the world economy grow at faster rate. Faster rate of world economic growth have been accompanied by lower oil prices. Low prices also increased oil consumption due to its low cost and income effects resulting from the reduced cost of petroleum products and higher economic growth (Alhajji, 2001).

If the INF continues to rise, Malaysia would face some problem with its economic growth. When the inflation increases, the cost of production will also increase. The imported goods will be cheaper than the local goods. Consumer will end up buying more imported goods, which will also affect the balance of trade (BOT). If Malaysia import is greater than the export, the BOT will become deficit. This indicates the excess outflow of local currency and disrupts the stability of Ringgit stability. However, inflation would become stable if no changes occur on the structure of controlled goods price.

Since the world oil price is worrisome and it affects the economic performance, the government might need to find other cheaper alternative source of power for consumption. Where using alternative fuels cannot bring about savings on cost and environmental pollution from using earth oil, methods should be adopted to affect cutting down on oil consumption. For example, vehicles can be made to run more economically, where it consume less fuel. Other than that, to overcome the problem of increasing demand against low supply, oil companies should be generous enough to spend a substantial amount of money on exploration. New discoveries of oil wells could contribute to more supply of crude oil. If worse comes to worst, government can take action by controlling price of goods and services to maintain price stability. If not, it will contribute to the barriers on the economic development, social life and standard of living.

However, this study also has it own limitations. Firstly, the selection of variables and period of data that could measure the economic growth as far as oil price is concerned still limited. A further study should use more data, for instance foreign direct investment (FDI) and net investment and longer period of data study such as; 10 years or more to have a clearer trend of the impact of world oil price changes on Malaysian economic performance. Secondly, this study was conducted using regression method only. Therefore, more analysis methods can be used to compare the result with the existing one, if there is (are) any difference(s). Lastly, this study was based on data in Malaysia only which has no specific benchmark. In the future, data from other country can be analyzed so that the result can be compared against Malaysian economic performance.

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TABLE 1 : Results of Multicollinearity Test

Model	Variable	Variance Proportions						VIF
		Oil Price	Interest	Oil Export	Net Export	CI	IPI_{t-1}	
1	Oil Price	0.01	0.19	0.00	0.00	0.00	0.01	5.764
	Interest	0.22	0.28	0.00	0.00	0.00	0.01	3.101
	Oil Export	0.27	0.45	0.01	0.01	0.11	0.78	1.190
	Net Export	0.15	0.04	0.04	0.02	0.83	0.16	4.464
	CI	0.33	0.01	0.31	0.90	0.04	0.03	3.701
	IPI_{t-1}	0.03	0.03	0.65	0.07	0.01	0.02	3.810

TABLE 2 : Results of Multicollinearity Test

Model	Variable	Variance Proportions					VIF
		Interest	Oil Price	CI	IPI_{t-1}	Oil Export	
1 (2^{nd} regression)	Interest	0.19	0.01	0.00	0.01	0.00	3.097
	Oil Price	0.28	0.33	0.00	0.00	0.00	3.784
	CI	0.44	0.38	0.19	0.74	0.01	3.444
	IPI_{t-1}	0.07	0.29	0.78	0.24	0.08	3.792
	Oil Export	0.02	0.00	0.03	0.01	0.91	1.096

TABLE 3 : Results of Multicollinearity Test

Model	Variable	Variance Proportions				VIF
		Oil Price	Interest	CI	IPI	
2	Oil Price	0.00	0.20	0.00	0.01	3.684
	Interest	0.34	0.28	0.00	0.01	3.034
	CI	0.45	0.36	0.30	0.58	3.473
	IPI	0.20	0.16	0.70	0.41	3.558

TABLE 4 : Results of R, R^2 and Durbin Watson Tests

Model	R	Adjusted R Square	Durbin-Watson	F	Sig.
1	0.950	0.892	1.803	82.223	0.000
1 (2^{nd} regression)	0.947	0.888	2.954	94.578	0.000
2	0.717	0.479	1.672	14.575	0.000

TABLE 5 : Results of t-test

Variable	Model 1		Variable	Model 1*		Variable	Model 2	
	t	Sig.		t	Sig.		t	Sig.
Oil Price	-0.816	0.418	Interest	-1.919	0,06	Oil Price	6.148	0.000
Interest	-1.892	0.064	Oil Price	0.240	0.811	Interest	-2.427	0.019
Oil Export	2.276	0.027	CI	-0.867	0.390	CI	-3.030	0.004
Net Export	1.730	0.089	IPI_{t-1}	8.799	0.000	IPI	-1.499	0.139
CI	-1.308	0.197	Oil Export	2.825	0.007			
IPI_{t-1}	9.057	0.000						

* 2nd regression