THE IMPACT OF WORLD OIL PRICES TO INDONESIA'S MACROECONOMY: Crisis and After Crisis

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ABSTRAKSI

Penelitian ini bertujuan untuk menganalisis dampak kenaikan harga minyak dunia terhadap kinerja makroekonomi Indonesia. Kinerja makroekonomi Indonesia diindikasikan oleh Gross Domestic Product (GDP) riil, inflasi, tingkat suku bunga, dan defisit anggaran pemerintah. Tingkat inflasi dicerminkan oleh Indeks Harga Konsumen (IHK). Data yang digunakan dalam kajian empiris ini adalah data sekunder runtut waktu kuartalan dari tahun 1997.I sampai 2006.III atau 39 pengamatan yang diperoleh dari berbagai penerbitan. Alat analisis yang digunakan adalah model Structural Vector Autoregression (SVAR) dengan penekanan pada analisis impulse response.

Hasil estimasi model Structural Vector Autoregression (SVAR) yang ditunjukkan oleh analisis impulse response. Impulse Response Function (IRF) memberi informasi bahwa dengan asumsi Indonesia merupakan negara pengimpor minyak (net importer country) diperoleh hasil bahwa GDP riil memberikan respon negatif terhadap shock kenaikan harga minyak. Inflasi, tingkat suku bunga, dan defisit anggaran pemerintah memberikan respon positif terhadap shock kenaikan harga minyak, dan juga memberikan respon negatif terhadap shock makroekonomi. Dalam studi ini, shock makroekonomi adalah shock terhadap GDP.

Kata Kunci*: shock harga minyak, kinerja makroekonomi Indonesia, model SVAR, impulse response*

INTRODUCTION

Oil and natural gas sectors have important role in Indonesia's economy because as foreign exchange producer commodity and factors of production (raw material and fuel) for the sector of transportation, household, power plant and industry (Prawiraatmadja, 2005). In order to fulfilling the requirement of oil in Indonesia, at this moment there are 7 refineries with capacity installed, these are from Pangkalan Brandan, Dumai, Plaju, Cilacap, Balongan, Balikpapan and Shove (Maskurun, 2005). Production growth and Indonesia's crude oil export and import can be seen in Figure 1.

Figure 1 shows that Indonesia crude oil production continue to experience of degradation accompanied by increasing import oil. During period 1993 – 2004, it indicates that there is tendency of Indonesia position as net importer. This condition has raced government to increase produces migas with acceleration produce in 16 new fields at 2007 (*Suara Karya*, 2006). Such as, Gendalo and Merah Besar fields development (PT Chevron Pacific Indonesia), Lapangan Jeruk and Oyong (Santos), Blok Cepu (Exxonmobil), Ujung Pangkah (Amerada Hess), Sepanjang (EMP Kangean), Secanggang, Gebang, Anggor (Costa Inti), Pondok Tengah (Pertamina), Sisi
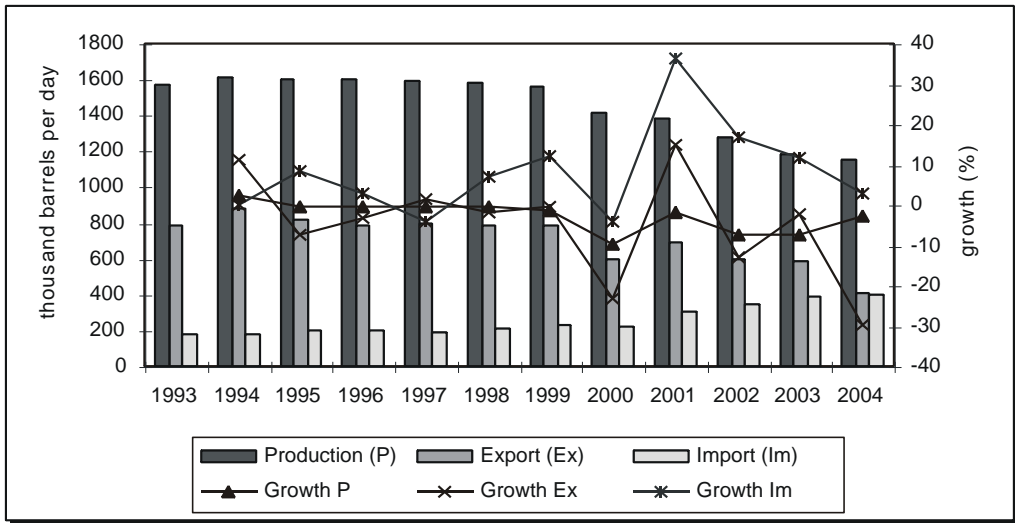
Source: Migas and Pertamina (modified)

Figure 1. Production, Export and Import of Crude Oil in Indonesia (thousand barrels per day)

Nubi (Total Indonesia), Nilam, Zamrud South and SE BNE Bekasap (BOB Bumi Siak Pusako), and Argo field (JOB Petrochina Salawati). On the other side, OPEC (Organization of Petroleum Exporter Countries) summit in Nigeria at middle of December 2006 has decided to clip quota of production equal to 500 thousand barrels per day start on February 2007. The cutting of last production has done in last month which counted 1.2 million barrels per day.

The production quota, meant for the increase of oil price which have slow down 20 percent since reaching its top about 78 percent per barrel on July and August 2006. OPEC wants world crude oil price in relatively constant price around 60 US dollars per barrel in 2007. That condition is constituted by statement of Chief Council Governor OPEC Maizar Rahman tells that "OPEC will do to increase produce if price far above 60 dollar per barrel and conversely will reduce production if under 60 dollar per barrel". At cutting on October 2006, Indonesia gets reduction quota production of 39,000 barrels per day, whereas the cutting on Februari 2007 only 16,000 barrels per day. But Indonesia

gets exemption do not be cut by its production, considering in this time its production level a long way off under OPEC quota. The Indonesian oil production level on 2006 was only 1,007 million barrels per day, whereas OPEC quota reached 1.4 million barrels per day (*Suara Karya*, 2006).

Of course, Indonesia's oil condition will affect the national budget to import oil, especially deficit problems of budget. On the other side, government has released a policy to increase price of oil/*Bahan Bakar Minyak* (*BBM*) which of course has a direct implication to the inflation rate. The condition of destroyed by oil price distortion a world of tend to increase since period early economic crisis in Indonesia, in the middle of the 1997. Figure 2 shows movement of world oil price at year period 1995 – 2004, while Figure 3 shows movement of economic growth, deficit growth and inflation of governmental budget of Indonesia during period 1997 - 2004. Deficit growths of budget have fluctuation that tend to decrease and contrast with the direction of inflation rate. If related to the movement of budget deficit and world oil price also make a move up at is trade-off. This
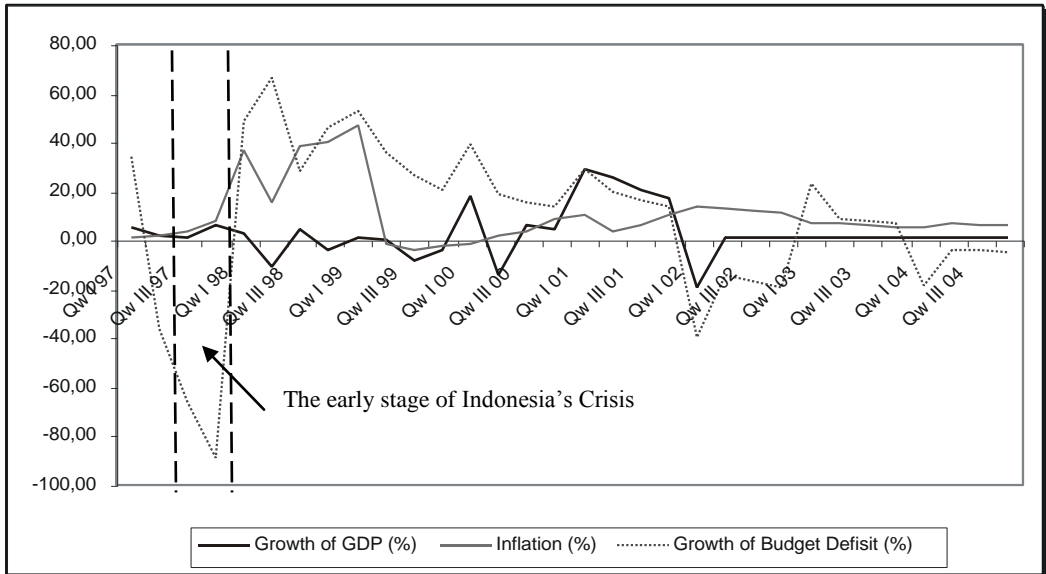
condition means that the higher world oil price, the greater tendency of governmental budget deficit and growing of domestic inflation, with the assumption that government still give oil subsidy to society in gross and Indonesia position as net importer country.

Source: WTI in http://www.iea.org (modified)

Figure 2. The World Oil Price (US$/barrel)

Source: BPS and Bank Indonesia (modified)

Figure 3. The Growth of GDP, inflation and Growth of Budget Deficit of Indonesia (%)

Related to budget deficit, government have authority to do adjust the budget according to the world oil price distortion, ability of domestic production and tendency of increasing of domestic oil consumption. However, policy of *BBM* price righteously do not only instructed to protect budget deficit because the policy consequence extremely big to inflation rate, society purchasing power and distortion in transportation sector. Ikhsan (2005) explains the level of governmental budget allocation impact for the subsidy of oil at state budget shall be as follows:

> *"Each month postponement will be valuable of Rp10 trillion subsidy additions or let leakage equal to Rp8 trillion per month. Delaying 1 month will be about Rp10 trillion deficit additions that it's not clear of financing source. Adding domestic debt will be very costly its expense because the loans that be asked by market for governmental obligation is almost 15%. Become its fare not merely adding governmental debt equal to Rp10 trillion but also interest expenses equal to Rp150 trillion per year. It is important to know that budget amount is Rp10 trillion and its loans have financed the rehabilitation of all schools and building infrastructure for 7,150 villages in Indonesia."*

On November 2007, world crude oil price reached US$95 per barrel. This condition had impact to depreciation of exchange rate and governmental budget deficit. This condition was caused by increasing subsidy of *BBM*. The depreciation of Rupiah exchange rate happened from Rp9.315 per US$ became Rp9.390 per US$ in the middle of November 2007 (*Media Indonesia*, November 2007). Government had predicted that amount of subsidy of *BBM* and electricity would increase sharply at this time. The subsidy of *BBM* increased to Rp87 trillion from the target of governmental budget (*APBN*) equal to Rp55 trillion. Meanwhile, subsidy of electricity

became Rp42 trillion from early prediction equal to Rp34 trillion (Suhud, 2007).

At this time, the production of Indonesia crude oil less than its target. From 150 oil fields that Indonesia have, only 58 fields that active. Minister of Energy and Mining Resources, Purnomo Yusgiantoro felt disappoint with the decreasing of crude oil production after Regional Autonomy exist. As example, the oil field in Riau after it was organized by regional government, the production decreased from 60,000 barrels to 22,000 barrels. In 2007, production of Indonesia crude oil will reach 910 barrel per day. If the targets of lifting can not be reached, government can do compensation policy with increasing of price side amount of 118% (*Media Indonesia*, November 2007).

Based on phenomenon movement of world oil price, economic growth, interest rates, Indonesia budget deficit and inflation, the research about the impact of world oil price to Indonesian economy is really important. Condition of Indonesia economy in this research is expressed by *GDP*, economic growth, interest rates, budget deficit and inflation. Analysis method which is used in this research is Structural Vector Auto regression (*SVAR*) model.

THE RESEARCH QUESTION

The question of this research is "to what extent world oil price shocks have brought any impacts on macroeconomic performance in Indonesia?" The macroeconomic performances are depicted by growth of real GDP, *SBI* 3-months interest rates, governmental budget deficit, and consumer price index.

THE RESEARCH BENEFITS

This research is expected may give contribution to the study about economic and oil in Indonesia. This condition considers that movement of world oil price can influence governmental decision in formulating state budget allocation especially for the subsidy of

oil to society. In addition, increasing of world oil price would affect the Indonesia inflation rate caused by tendency that Indonesia becomes net importer country.

THEORETICAL FRAMEWORK

World Oil Prices and Domestic Inflation

Oil prices remain an important determinant of global economic performance. Increasing of oil price leads to a transfer of income from importing to exporting countries through a shift in the terms of trade (IEA, 2004).

The explanation of the impact between oil prices and inflation had been developed by Hooker (2002) in FRBSF (2005), 1962–2000 periods. His model used the rate of change of oil prices, the unemployment gap (which is the prevailing unemployment rate relative to a benchmark known as the natural rate of unemployment) and lagged inflation to predict core PCI inflation. Statistical tests found a break in the estimated relationship among these variables at the end of 1980. When he allowed this relationship to differ between the periods 1962–1980 and 1981–2000, he found that oil prices had a significant impact on inflation in the earlier period, but not in the later period.

Roubini and Setser (2004) found that oil prices shocks have a stagflation effect on the macroeconomic of an oil importing country. The size of the output growth/level effect and inflation rate/price level effect of an oil shock depend on many factors. They are: (1) the size of the shock, both in terms of the percentage increase in oil prices and the real price; (2) the shock's persistence; (3) the dependency of the economy on oil and energy; and (4) the policy response of monetary and fiscal authorities.

Cartel Phenomena

The OPEC cartel has pursued a high price strategy in an oil market under pressure from rising demand. While it may have encountered short-run capacity constraints, OPEC did not commit to increase oil output and bring the price to a lower, more manageable level. Instead, it has actually cut oil output intermittently (Saxton, 2007). The movement and development of oil market in the world significantly dependent on the role of OPEC's mission. The Mission of the OPEC is to coordinate & unify the petroleum policies of Member Countries & ensure the stabilization of oil prices in order to secure an efficient, economic & regular supply of petroleum to consumers, a steady income to producers & a fair return on capital to those investing in the petroleum industry.

Theoretically, cartel markets are identified as a group of producer's organization to anticipate and reduce risk from competitors through collusive agreement. Generally, cartel can be divided into two types; (1) cartel for maximizing profit and (2) cartel in order to separate market (Sudarman, 2002).

METHODOLOGY

Econometric Specification

Most oil price increases have been followed by a raise in the federal funds rate. Historically, increases in the price of crude oil tend to raise inflationary pressures and governmental budget deficit[1]. Based on Bernanke *et al* (1997) argue that the systematic component of monetary policy accounts for a large portion of the decline in GDP growth that follows an oil shock. Although, the magnitude of the systematic component is a matter of debate (Hamilton and Herrera, 2004, Herrera and Pesavento, 2006, and Bernanke *et al,* 2004), there is no doubt that identifying the effect of systematic

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[1] This research does not proving impacts of world oil price to oil subsidy in governmental budget. Based on government prediction that impacts of increasing world oil price is world oil price increases amount of US$1 can causes increasing on oil subsidy amount of Rp3,7 trillion. And also, government proposes oil subsidy amount of Rp106.195 trillion in governmental budget revised (*APBN 2008*) (*Kompas, 18 February 2008*).

monetary policy is central to understanding the dynamic response of macro variables to oil shocks and macroeconomic shocks across the periods of interest.

In order to explore the role of monetary policy in the dynamic response of macro variables to oil shocks and macroeconomic shocks, we extend the modified VAR framework of Bernanke *et al* (2004), to analyze the effect of oil price shocks across the two periods of interest.[2] We estimate a quarterly structural VAR describing the behavior of the vector y_t, which contains three blocks of variables. The first block includes the following macroeconomic variables: the log growth of real GDP (gdp_rev,t), interest rates (sbi,t), the log of governmental budget deficit (def_revisi,t), and net oil price increase (net_oil_adj,t). The following block contains the log growth of real GDP (gdp_rev,t), interest rates (sbi,t), the log of consumer price index as expressed of the inflation rate (ihk_1,t), and net oil price incease (net_oil_adj_t). Especially, the last block includes three variables in VAR model, which are the log growth of real GDP (gdp_rev,t), interest rates (sbi,t), and the log of consumer price index (ihk_1,t). We assume that the structural VAR for yt has a linear moving average representation.

$$y_t = B(L)u_t \qquad B(0) = B_0 \qquad (1)$$

Where $B(L)$ is an infinite order matrix lag polynomial, and

$$[u_t = u_{gdp\_rev,t}, u_{sbi,t}, u_{def\_rev,t}, u_{net\_oil\_adj,t}, u_{ihk\_1,t}]$$

is a vector of white noise structural innovations. We identify the response function $B(L)$ and the structural disturbances u_t by

placing restrictions on certain elements of B_0 [3]. The restrictions are given by:

$$b_{net\_oil\_adj}(0) = b_{gdp\_rev}(0) = b_{sbi}(0) =$$

$$b_{def\_revisi}(0) = 0 \qquad (2a)$$

$$b_{def\_revisi}(0) = b_{gdp\_rev}(0) = b_{sbi}(0) = 0 \quad (2b)$$

$$b_{ihk\_1}(0) = b_{gdp\_rev}(0) = b_{sbi}(0) = 0 \qquad (2c)$$

$$b_{sbi}(0) = b_{gdp\_rev}(0) = 0 \qquad (2d)$$

$$b_{gdp\_rev}(0) = 0 \qquad (2e)$$

Source of Data

In this paper we use quarterly data, in the spirit of Bernanke *et al* (2004). In this manner we are able to include 3- quarterly lags in our VAR specification. This is of particular relevance given that we split the sample in two smaller sub-periods, which are crisis and after crisis. In addition, using quarterly data allows us to make our results comparable to previous literature on output and the other macro variables volatility.

The data include macroeconomic variables series from the first quarter of 1997 to the third quarter of 2006. As we mentioned before, the macroeconomic variables include the log growth of real GDP, the log of consumer price index as expressed the inflation rate, the net oil price increase, the log of governmental budget deficit, and the *SBI* 3-months interest rates. Data for real GDP, governmental budget deficit, consumer price index, and the SBI 3-months interest rates were obtained from the Statistical of Indonesian Finance and Economics database of the Central Bank of Indonesia. As a measure of oil price changes we use the net oil price increase which records the percentage change in the price of oil from the International Energy Agency (*IEA*) Report.

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[2] In this research, we use two periods of interest for investigating the effect macro variables to oil shocks and macroeconomic shocks, which are crisis and after crisis periods.

[3] Look at Enders (1995).

Table 1. ADF Unit Root Test

Variable	Level	1st Difference	Stationarity
GDP_REV	-0.868675	-5.054993	I(1)
IHK_1	-1.442479	-5.909371	I(1)
NET_OIL_ADJ	-2.003441	-7.522252	I(1)
DEF_REVISI	-2.596635	-7.0101	I(1)
SBI	-3.469658	-2.866058	I(1)

Source: Analysis Result

Stationary Data

Based on Augmented Dickey Fuller (*ADF*) unit root test is known that variables can be used in this research, including log growth of real GDP, log of consumer price index as expressed the inflation rate, net oil price increase log of governmental budget deficit, and *SBI* 3-months interest rates is stationer in first differences or I(1).

VAR ANALYSIS AND DISCUSSION

As mentioned in the previous section, the data span between 1997 and 2006. Nevertheless, as initially documented by Kim and Nelson (1999) and Mc-Connell and Perez-Quiros (2000) there is strong evidence of a structural break in volatility of GDP growth at the beginning of 1984. More recent work has confirmed the presence of a break anywhere between the fourth quarter of 1982 and the first quarter of 1989 with 90% confidence interval (Herrera and Pesavento, 2005). Therefore, in this research we divide the sample in two sub-samples: 1997:1 to 1999:4 and 2000:1 to 2006:3[4]. We have two reasons to split the sample at those particular dates.

First, because we want to study whether the economy's response to an oil price shock has changed and macroeconomic shocks in crisis period, we need to eliminate the period in which the structural break is possibly located. Second, we want to investigate the macro variables of oil shocks and macroeconomic shocks after crisis period. The exclusion of the possible break provides the additional advantage that the model would not have a structural break in the variance covariance matrix during the estimation of our VAR.

Oil Price Shocks

Oil prices remain an important determinant of global economic performance. Overall, an oil price increase leads to a transfer of income from importing to exporting countries through a shift in the terms of trade. The magnitude of the direct effect of a given price increase depends on the share of the cost of oil in national income, the degree of dependence on imported oil and the ability of end-users to reduce their consumption and switch away from oil. Naturally, the bigger the oil price increase and the longer higher prices are sustained, the bigger the macroeconomic impact. For net oil-exporting countries, a price increase directly increases real national income through higher export earnings (International Energy Agency, 2004).

Higher oil prices since 1999 lead to inflation, increased input costs, reduced non-oil demand and lower investment in net oil-

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[4] Chow Break Point Test on period of 1998:1 – 2005:4 (the date should be within the current sample of observations) shows that null hypothesis (*H_0*) is accepted or rejected. Its mean that there is a structural break point or not. Generally, the result of Chow Break Point Test on period of 1998:1 – 1999:4 is significant. Its mean that in those periods have structural break. And also on period of 2000:1 – 2005:4 have structural break (**see appendix**).

importing countries. Tax revenues fall and the budget deficit increases, due to rigidities in government expenditure, which drives interest rates up. An oil price increase also changes the balance of trade between countries and exchange rates. Net oil-importing countries normally experience deterioration in their balance of payments, putting downward pressure on exchange rates. As a result, imports become more expensive and exports less valuable, leading to a drop in real national income. Without a change in central bank and government monetary policies, the dollar may tend to rise as oil-producing countries' demand for dollar-denominated international reserve assets grow (International Energy Agency, 2004).

Based on Figure 4 and Figure 5, we can suggest that interest rates and governmental budget deficit give negative response to Gross Domestic Product (*GDP*) in Impulse Response Function (*IRF*). This condition is shown by path position from interest rates and governmental budget deficit in below of main line (0.0). It's mean that if interest rates and governmental budget deficit increase, the Gross Domestic Product (GDP) will decreases at a long time. And also we can see the dynamic response of interest rates and budget deficit to oil price increase. The interest rate and budget deficit give positively response to oil price increase. Whereas oil price increase gives negative response to Gross Domestic Product (GDP), our macroeconomic shocks.

Based on Figure 6, we can suggest that consumer price index as expressed by the inflation rate gives negative response to Gross Domestic Product (GDP) in Impulse Response Function (IRF). It means that if the inflation rate increases, Gross Domestic Product (GDP) will decreases significantly. In Impulse Response Function (IRF), we can also suggest that the inflation rate gives positive response to oil price increase. It means that the higher oil price will cause the higher inflation rate.

Based on Figure 7, we can suggest that the inflation rate gives positive response to interest rates significantly. It means that higher interest rates will cause higher inflation rate. Therefore, the inflation rate gives negative response to Gross Domestic Product (GDP). This condition shows that relationships between Gross Domestic Product (GDP) and inflation rate are negative significantly.

Based on Figure 8, we can suggest that Gross Domestic Product (GDP) gives negative response to oil price increase in Impulse Response Function (IRF). Because of oil price increase leads to inflation and the budget deficit increases, so Gross Domestic Product (GDP) downturn.
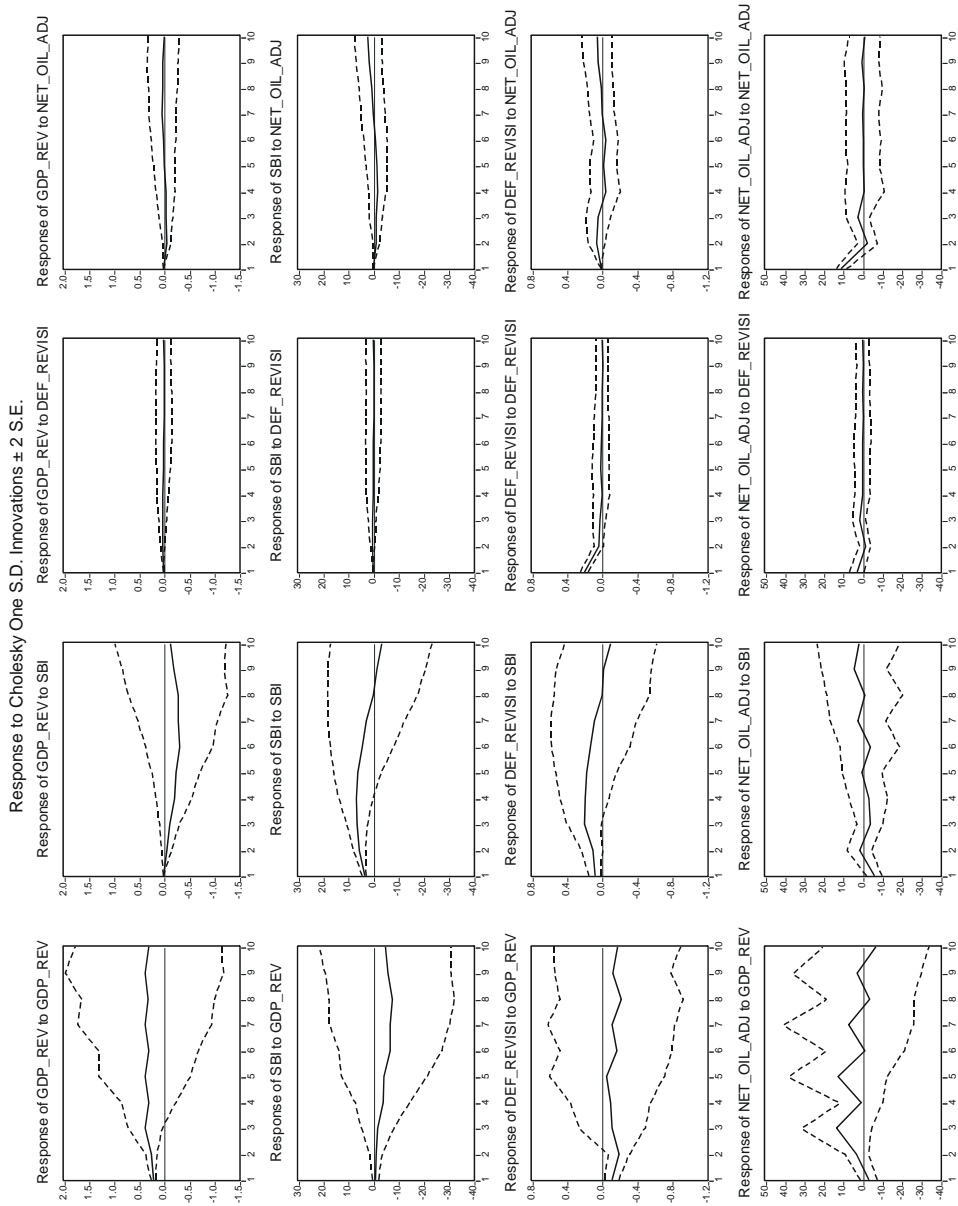
Figure 4. IRF for effect inflation rate and interest rate response to GDP and interest rates response to oil price increase

Source: Bank Indonesia, Analysis Result
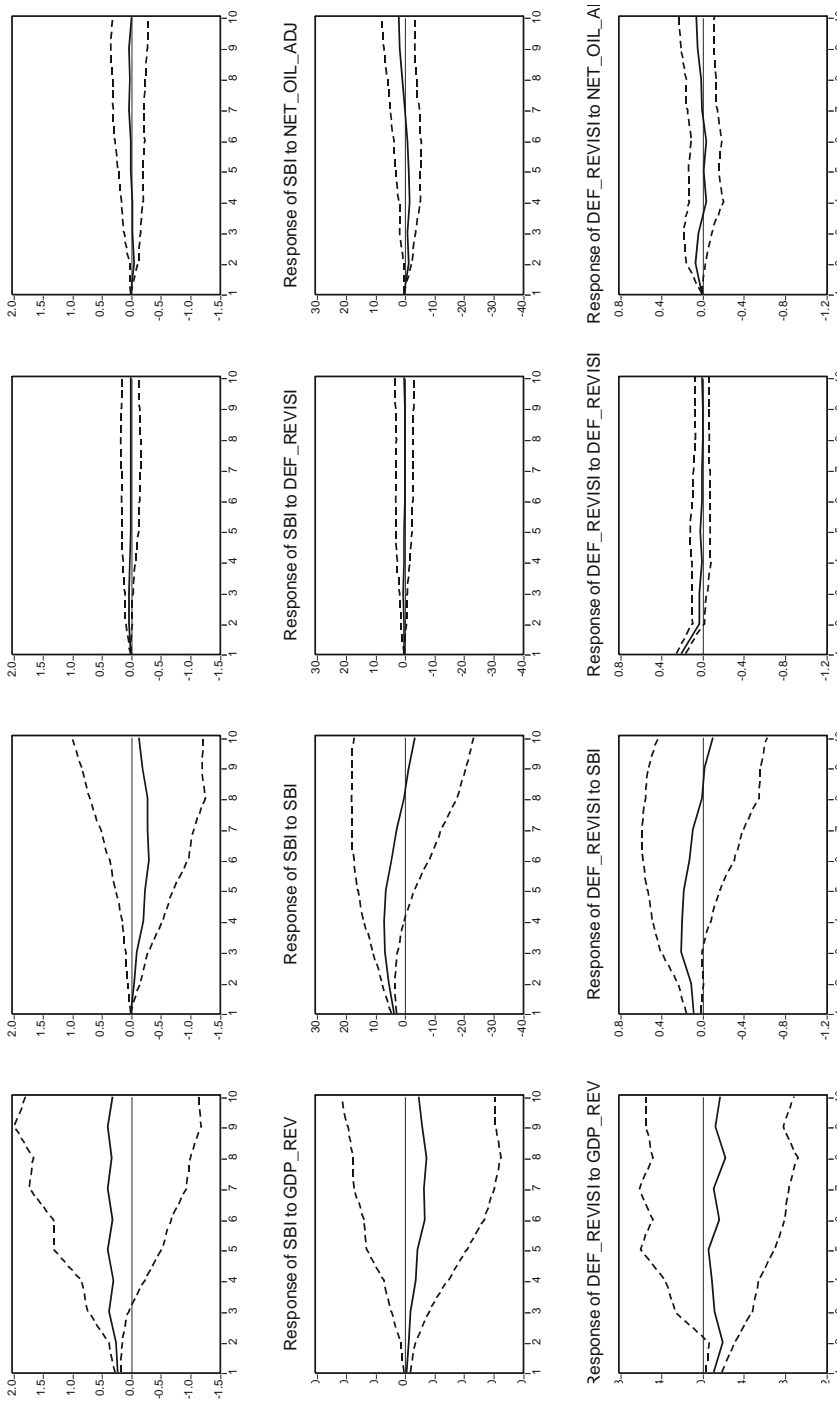
Source: Ministry of Finance, Analysis Result

Figure 5. IFR for effect budget deficit response to oil price increase

Response of IHK_1 to GDP_REV

Response of IHK_1 to IHK_1

Response of IHK_1 to DEF_REVISI

Response of IHK_1 to NET_OIL_ADJ

Response of DEF_REVISI to GDP_REV

Response of DEF_REVISI to IHK_1

Response of DEF_REVISI to DEF_REVISI

Response of DEF_REVISI to NET_OIL_AI
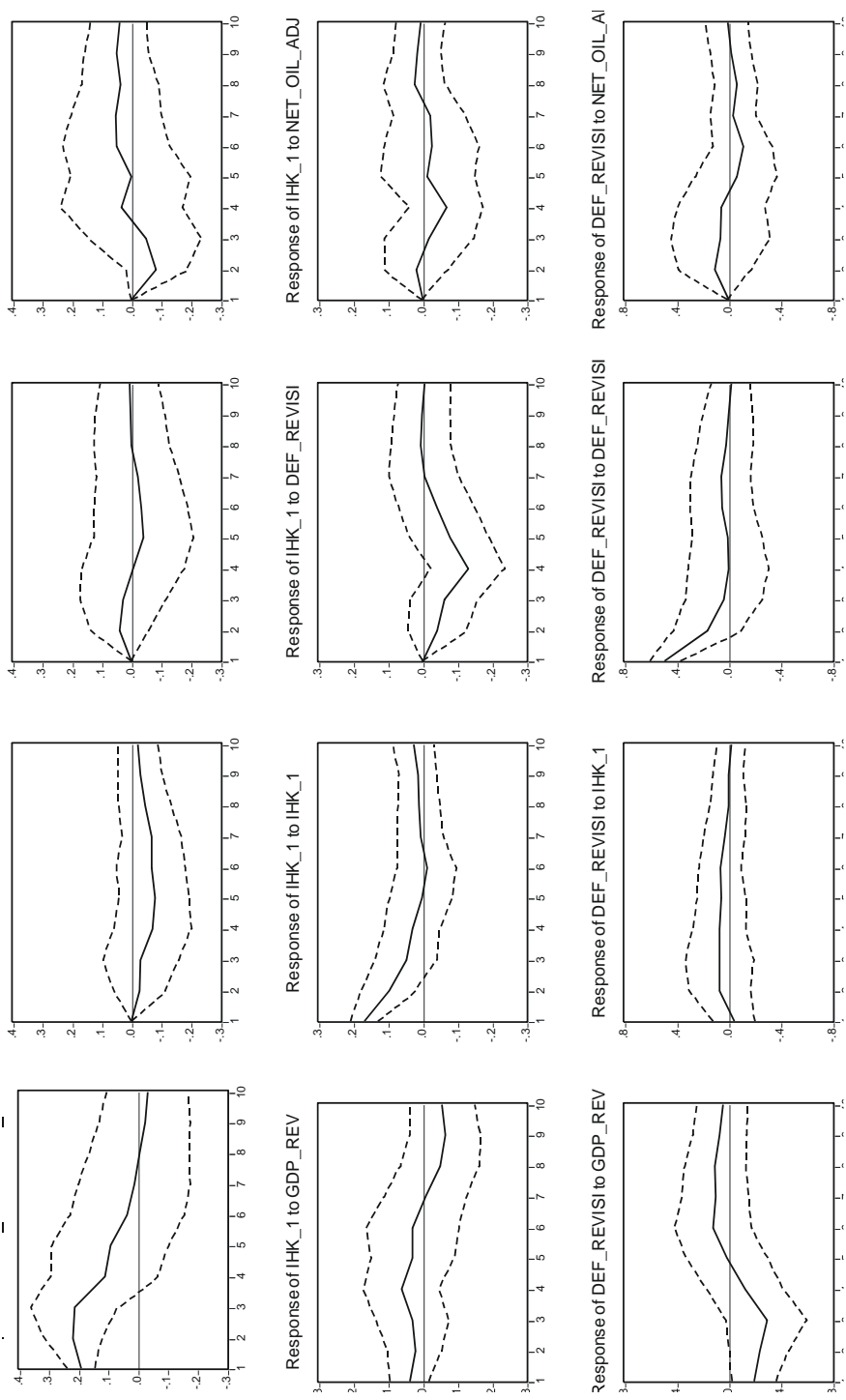
Source: Bank Indonesia, Analysis Result

Figure 6. IRF for effect inflation rate response to GDP and oil price increase
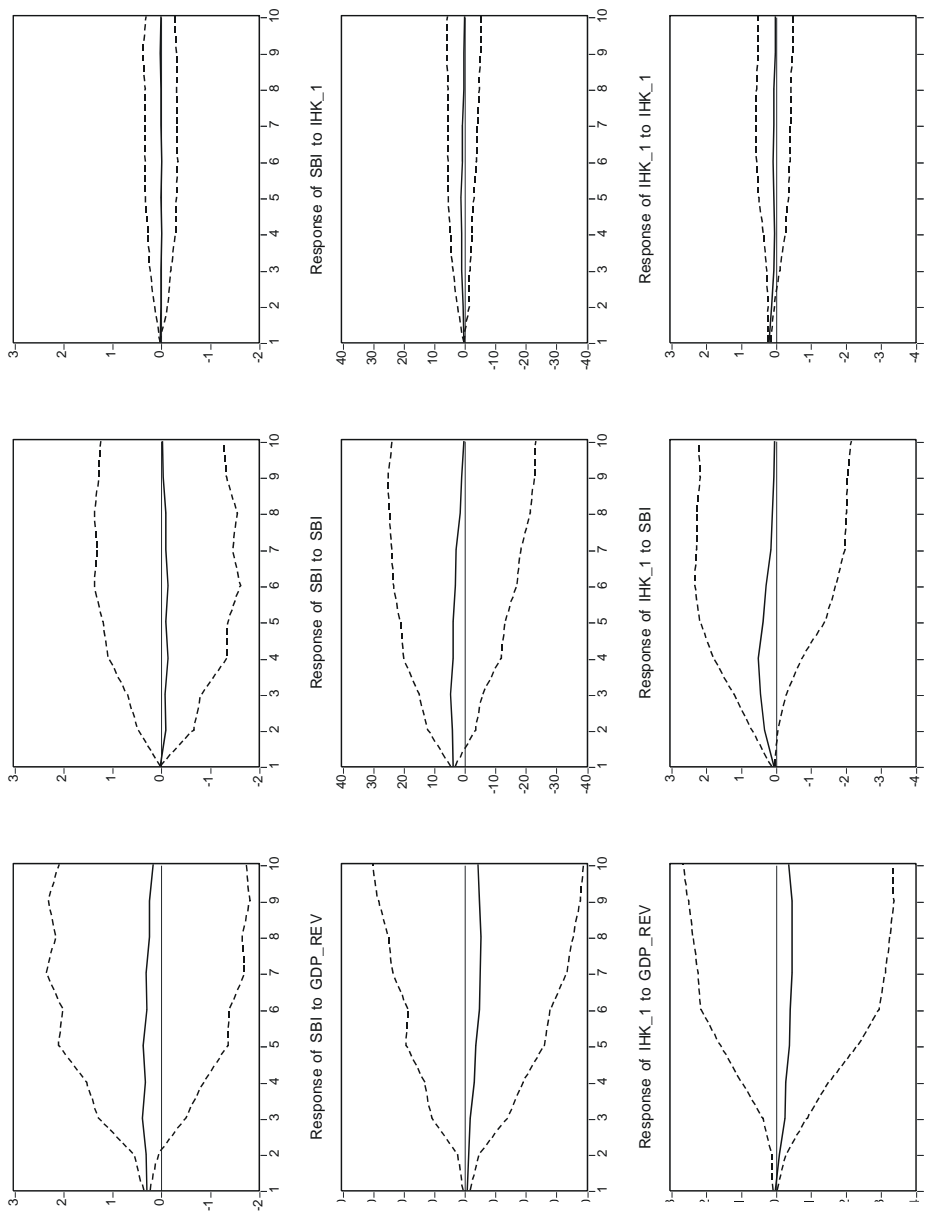
Source: Bank Indonesia, Analysis Result
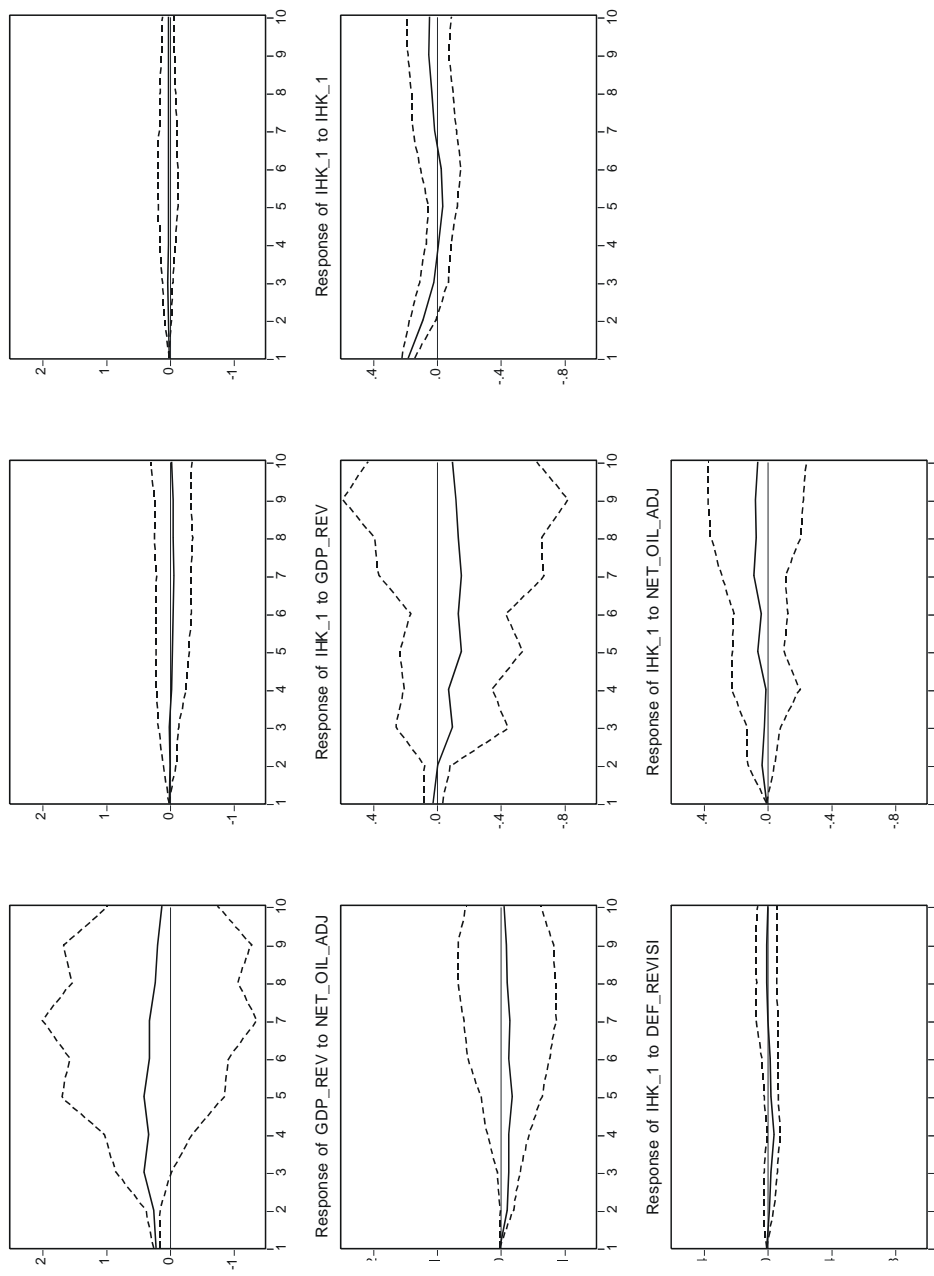
Figure 7. IRF for effect inflation rate response to interest rates and GDP

Figure 8. IRF for effect Gross Domestic Product response to oil price increase

Supply and Demand Sides of the World Crude Oil

Global oil product demand has been kept virtually unchanged at 84.5 mb/d in 2006 and 86.0 mb/d in 2007. Downward revisions to 4Q06 OECD data were largely offset by upward changes in non-OECD figures. In percentage terms, world demand is estimated to have grown by 1.0% in 2006; in 2007, it is expected to increase by 1.8% [5].

OECD oil product demand has been slightly lowered by 35 kb/d in 2006 and 56 kb/d in 2007. Data revisions and continuing mild temperatures, particularly in Europe and the Pacific, weighed down on heating and residual oil demand. Total OECD oil product demand is estimated to have declined by 0.9% in 2006, but it is still expected to rebound by 0.8% in 2007 to 49.6 mb/d.

Non-OECD oil product demand has been adjusted upwards slightly in 2006 and 2007, due to a rebasing of India's consumption and revisions to FSU and China apparent demand. Non-OECD oil product consumption is now estimated to have grown by 3.7% in 2006.

This year, demand is expected to rise by 3.3% to 36.5 mb/d.

World oil supply drifted lower by 65 kb/d in February to 85.5 mb/d as a 130 kb/d reduction in total OPEC supply countered a modest rise from non-OPEC. Preliminary data suggest that the UK, Canada, Kazakhstan, Brazil, Angola and Iraq saw higher February output, offset by markedly lower production from the US, Mexico, Norway, Saudi Arabia and Venezuela.

Total OPEC crude supply averaged 30.2 mb/d in February, a fall of 125 kb/d versus January. Recovering southern exports pushed Iraqi supply up by 185 kb/d to 1.9 mb/d while rising new field output saw Angolan production breach 1.55 mb/d. Offsetting supply cuts came from all other OPEC members, led by Saudi Arabia (100 kb/d), Venezuela (65 kb/d), Kuwait, Iran and UAE (35-40 kb/d each). Nigerian production continues to struggle, with up to 800 kb/d of shuttered production in early March. Effective spare OPEC capacity was up by 320 kb/d to 2.8 mb/d in February. Sustainable production capacity could rise by some 800 kb/d to 35 mb/d by end-2007.

Table 2. Global Oil Demand (million barrels per day)

	1Q05	2Q05	3Q05	4Q05	2005	1Q06	2Q06	3Q06	4Q06	2006	1Q07	2Q07	3Q07	4Q07	2007
Africa	2.9	2.9	2.8	2.9	2.9	3.0	3.0	2.9	3.0	2.9	3.0	3.0	2.9	3.0	3.0
Americas*	30.6	30.4	30.8	30.6	30.6	30.2	30.3	30.7	30.6	30.5	30.8	30.6	31.6	31.3	31.0
Asia/Pacific**	25.0	23.4	23.4	24.4	24.0	25.1	24.1	23.8	25.0	24.5	25.3	24.6	24.5	25.7	25.0
Europe***	16.4	15.9	16.2	16.4	16.2	16.6	15.8	16.1	16.3	16.2	16.3	15.8	16.2	16.5	16.2
FSU	3.8	3.7	3.8	3.9	3.8	3.9	3.7	4.0	4.3	4.0	3.9	3.8	4.0	4.5	4.0
Middle East	6.0	6.1	6.4	6.0	6.1	6.3	6.4	6.7	6.4	6.5	6.6	6.7	7.0	6.7	6.8
World	**84.7**	**82.5**	**83.4**	**84.2**	**83.7**	**85.0**	**83.3**	**84.1**	**85.5**	**84.5**	**85.9**	**84.6**	**85.9**	**87.7**	**86.0**
Annual Chg (%)	2.8	1.6	1.7	0.2	1.6	0.4	1.0	0.9	1.5	1.0	1.0	1.6	2.1	2.6	1.8
Annual Chg (mb/d)	2.3	1.3	1.4	0.2	1.3	0.4	0.8	0.8	1.2	0.8	0.9	1.3	1.8	2.2	1.5
Changes from last month's report	-	-0.01	-0.02	-	-0.01	-	0.01	0.01	-0.04	-0.01	-0.35	0.03	-0.04	0.32	-0.01

* OECD North America & Latin America
** OECE Pacific, China & other Asia
*** OECD & non-OECD

Source: International Energy Agency – Oil Market Report in http://www.oilmarketreport.org

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[5] Oil Market Report. *International Energy Agency*, 13 Maret 2007.

Table 3. OPEC Crude Production (million barrels per day)

	1 July 2005 Target [2]	1 November 2006 Target [2]	February 2005 Production	Sustainable Production Capacity [3]	Spare Capacity vs Feb 2007 Production
Algeria	0.89		1.32	1.39	0.07
Indonesia	1.45		0.84	0.95	0.12
Iran	4.11		3.87	3.95	0.09
Kuwait[4]	2.25		2.42	2.60	0.18
Libya	1.50		1.69	1.75	0.06
Nigeria[5]	2.31		2.25	2.47	0.22
Qatar	0.73		0.80	0.85	0.05
Saudi Arabia[4]	9.10		8.60	10.80	2.20
UAE	2.44		2.56	2.70	0.14
Venezuela[6]	3.22		2.43	2.70	0.28
Subtotal	**28.00**	**26.30**	**26.76**	**30.16**	**3.40**
Angola[1]			1.57	1.57	0.00
Iraq			1.88	2.50	0.62
Total			**30.21**	**34.23**	**4.02**
(excluding Iraq, Nigeria, Venezuela, Indonesia					*2.79)*

1. Angola joins OPEC effective 1 January 2007.
2. Target production levels superseded by decision to cut output by 1.2 mb/d from 1 November 2006 and 0.5 mb/d from 1 February 2007. Implied aggregate production targets around 26.3 mb/d from November and 25.8 mb/d from February.
3. Capacity levels can be reached within 30 days and sustained for 90 days.
4. Includes half of Neutral Zone Production.
5. Nigeria excludes some 545 kb/d of shut-in capacity
6. Includes Orinoco extra heavy oil assumed at 525 kb/d in February

Source: International Energy Agency – Oil Market Report in http://www.oilmarketreport.org

CONCLUSIONS

In this paper we analyze the contribution of oil prices shocks and macroeconomic shocks to the decline in Indonesia's output, budget deficit and inflation volatility. Oil prices remain an important macroeconomic variable: higher prices can still inflict substantial damage on the economies of oil-importing countries and on the global economy as whole. For this period, the impulse response indicates dynamic response macro variables, which include Gross Domestic Product (GDP), governmental budget deficit, interest rates, and inflation rate to oil shocks and macroeconomic shocks.

Based on this research analysis, interest rates and governmental budget deficit give negative response to Gross Domestic Product (GDP) in Impulse Response Function (IRF). It means that if interest rates and governmental budget deficit increase, Gross Domestic Product (GDP) will decreases at a long time. The interest rate and budget deficit give positive response to oil price increase. Consumer price index as expressed by the inflation rate gives negative response to Gross Domestic Product (GDP) in Impulse Response Function (IRF). It means that if the inflation rate increases, Gross Domestic Product (GDP) will decreases significantly. The inflation rate gives positive response to oil price increase. It means that the higher oil price causes the higher inflation rate. The inflation rate gives positive response to interest rates significantly. It means that the higher interest rates causes higher inflation rate. Gross Domestic Product (GDP) gives negative response to oil price

increase in Impulse Response Function (IRF). Because of oil price increase leads to inflation and the budget deficit increases, so Gross Domestic Product (GDP) downturn.

The implication of world oil price fluctuation has affected budget deficit significantly. This condition is a result from an increasing of oil subsidy allocation in governmental budget. Unfortunately, this research does not studying about effect of oil price to oil subsidy allocation, so expected existence of furthermore research.

The results of the simulations presented in this paper suggest that further increases in oil prices sustained over the medium term would undermine significantly the prospects for continued global economic recovery. Oil-importing developing countries would generally suffer the most as their economies are more oil-intensive and less able to weather the financial turmoil wrought by higher oil-import costs.

APPENDIX

Chow Break Test

Chow Breakpoint Test: 1998:1 1999:4

F-statistic	6.383728	0.000641
		Probability
Log likelihood ratio	22.35152	0.000171
		Probability

Source: Analysis Result

Chow Breakpoint Test: 2000:1 2005:4

F-statistic	8.641613	0.000069
		Probability
Log likelihood ratio	27.94756	0.000013
		Probability

Source: Analysis Result

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