

Effects of the Oil Price Upsurge on the World Economy¹

By Hiromi Kato^{2 3}

Introduction

In early 2002, the world economy emerged from the recession caused by the bursting of the communication technology bubble and the 9/11 terrorist attacks and launched a recovery led by the United States and China. U.S. and Chinese economic growth has worked to boost demand for oil and other resources and raise their prices. The current world economic recovery has exceeded three years, and Japan's recovery has topped the average economic expansion period. Oil and other primary resources prices have risen fast during the recovery, but these price hikes have yet to lead to inflation, as prices of final goods have remained relatively stable in industrial nations. In particular, the WTI crude oil price exceeded \$60 per barrel in June and \$65 per barrel in August, continuing to rewrite its record high. However, the oil price upsurge has yet to have any visible adverse effect on the world economic recovery. I would like to consider the effects of the oil price upsurge on the world economy, while reviewing present conditions of major national or regional economies.

1. Present Conditions of the World Economy

1-1 Japanese Economy

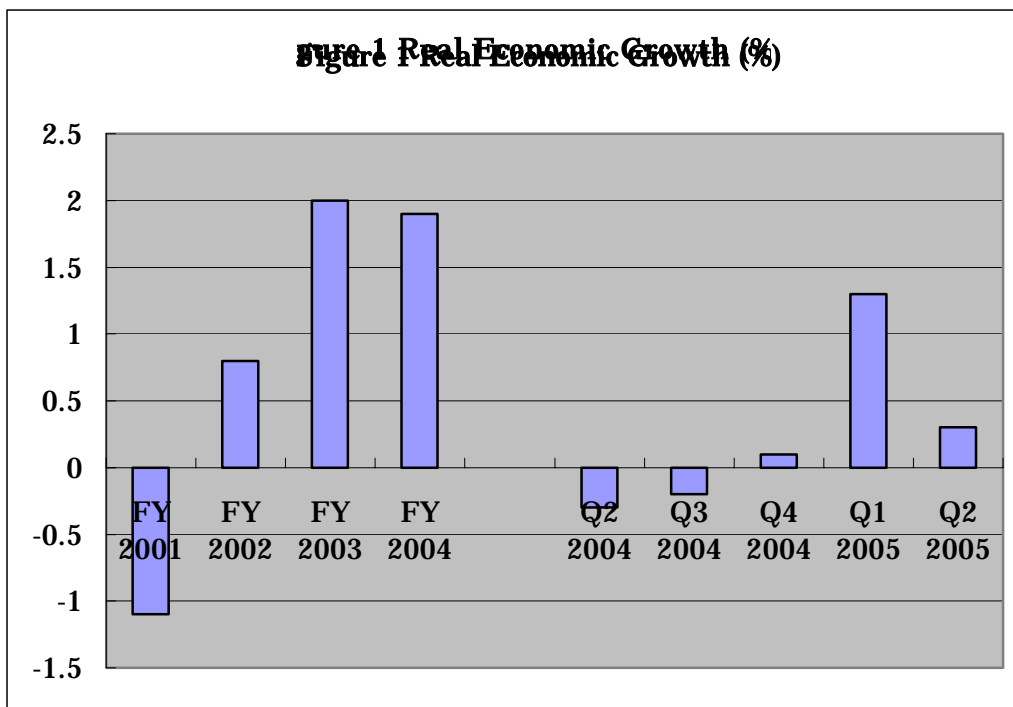
After experiencing economic contraction in FY 2001, the Japanese economy started its recovery on the strength of export growth supported by growing U.S. and Chinese demand. While later being affected by U.S. economic and other conditions on a quarter-by-quarter basis, the Japanese economy grew 1.0% in FY 2002, 2.0% in FY 2003 and 1.9% in FY 2004, and it has thus continued the recovery led by private capital investment and exports (see Figure 1). Manufacturers have led the current economic recovery, and therefore, one can say that it is a business sector-led recovery. In this initial phase of the recovery, companies restructured themselves to reduce costs and increase earnings, while their sales failed to increase due to persistent deflation; however, their sales have turned up recently. They are now enjoying growth in both sales and profit, and ratios of pretax profit to sales have risen to levels equivalent to those during the economic bubble period for both manufacturing and

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non-manufacturing companies. Oil and other primary resources price hikes have been priced into intermediate goods, but they have yet to spread to final goods prices. This is because the cost increase on energy and materials price hikes has been absorbed by productivity growth and wage control. However, the primary resources price upsurge has begun to affect earnings at some industries and small companies. At households, income growth had been weak with consumption growth remaining slow, but employment insecurity has faded away as companies' restructuring has run its course. Wage income has increased slightly on bonus growth. In this way, the oil price upsurge, though appreciated as a risk factor affecting sustained economic recovery, has yet to bring about any clear adverse effects.



Source: "Preliminary Report on Recent Quarterly GDP," Cabinet Office

1-2 U.S. Economy

As the silicon cycle entered a recovery phase in 2002, U.S. economic recovery started on robust business investment. The Bush administration's large income tax cuts and the Federal Reserve's low interest rate policy boosted residential investment and personal consumption, leading the economic recovery. Concerns emerged as employment failed to improve in the initial phase of the economic recovery. However, employment turned up later and has been improving smoothly. The U.S. economic recovery over the past three years has not necessarily been smooth. It was affected by

corporate accounting problems and geopolitical risks occasionally. Overall, however, the U.S. economy has continued its expansion (see Table 1). On the other hand, such economic expansion has led to robust demand for oil, and this has become a factor behind the oil price upsurge. The oil price runup has been expected to boost gasoline prices and cap consumption, but so far, no major effect has been seen, as income has been increasing on economic expansion. Consumption has been increasing moderately. The consumer price index rise, though having accelerated temporarily, has been relatively stable on the Fed's appropriate interest rate hikes.

1-3 EU Economy

In Euroland, economic recovery in major countries, such as Germany and France, had not been so strong until 2003 (see Table 1). Economic growth and inflation gaps had been widening between major Euroland countries, like Germany and France, and minor ones, such as Ireland. Major countries saw their budget deficits exceed the 3% of GDP stability standard level. Euroland had thus been faced with various problems. In mid-2003, however, Germany and some others, although with a delay in structural reforms, began gradual recovery depending on exports and centered on the corporate sector. In France, domestic demand recovery was seen. Due to the euro's appreciation, however, Euroland recovery has been slow, and recently, economic sentiment has deteriorated fast. The oil price upsurge's effects on Euroland have mostly been offset by the euro's rise. While bringing about such a benefit, the euro appreciation has worked to slow down exports and has made Euroland's economic future uncertain.

1-4 Chinese Economy

China has maintained strong economic growth above 9% (see Table 1). In 2004 when excessive capital investment emerged on such rapid economic expansion, however, China adopted measures to prevent overheating. The rapid economic growth has forced China to increase oil demand, while energy efficiency has remained low. China shifted from a net oil exporter to a net importer in 1993 and has expanded oil imports year by year. Consumer prices, including food prices, have moved substantially, but they have been basically stable. China heavily depends on coal among primary energy sources and income growth on economic expansion has been faster than the cost rise accompanying the oil price upsurge. Therefore, any effects of the oil price upsurge are not clear at present.

Table 1 National and Regional Real Economic Growth and Inflation (%)

1. Economic Growth											
	2002	2003	2004	2003			2004			2005	
				7~9	10~12	1~3	4~6	7~9	10~12	1~3	4~6
U.S.A.	1.9	2.7	4.2	7.2	3.6	4.3	3.5	4.0	3.3	3.8	3.4
Euroland	0.9	0.7	2.0	2.0	1.8	2.6	1.8	1.1	0.6	1.9	
Germany	0.2	0.0	1.6	0.6	2.4	1.7	0.8	-0.2	-0.5	4.2	
France	1.3	0.9	2.1	1.0	1.4	1.6	2.8	1.8	2.1	1.8	
U.K.	2.0	2.5	3.2	4.0	3.7	3.8	3.4	1.4	2.2	1.5	
China	8.3	9.5	9.5	9.3	9.5	9.8	9.7	9.5	9.5	9.4	9.5
ROK	7.0	3.1	4.6	5.9	11.6	2.6	2.4	3.3	3.8	1.5	5.0

Note) Annualized quarter-to-quarter growth. Year-to-date GDP's year-to-year growth for China. Year-to-year growth for ROK. Based on relevant national statistics.

2. Consumer Price Hike											
	2002	2003	2004	2003			2004			2005	
				7~9	10~12	1~3	4~6	7~9	10~12	1~3	4~6
U.S.A.	2.3	1.5	1.8	1.3	1.2	1.3	1.8	1.8	2.1	2.3	2.2
Euroland	2.2	2.1	2.1	2.0	2.0	1.7	2.3	2.2	2.3	2.0	2.0
Germany	1.4	1.1	1.6	1.1	1.2	1.0	1.7	1.8	2.0	1.8	1.7
France	1.9	2.1	2.1	2.0	2.2	1.9	2.4	2.2	2.1	1.6	1.6
U.K.	1.3	1.4	1.4	1.4	1.3	1.3	1.4	1.2	1.4	1.7	1.9
China	-0.8	1.2	3.9	0.7	1.2	2.8	3.6	4.1	3.9	2.8	2.3
ROK	2.7	3.6	3.6	3.2	3.5	3.2	3.4	4.3	3.4	3.1	3.0

Note) Core consumer price index (excluding food and energy prices) for U.S.A. Year-to-date hike for China. Based on relevant national statistics.

In spite of the substantial oil price upsurge, major national economies have continued recovery or expansion. The recent oil price upsurge has far less affected the world economy than the two waves of substantial oil price hikes in the 1970s.

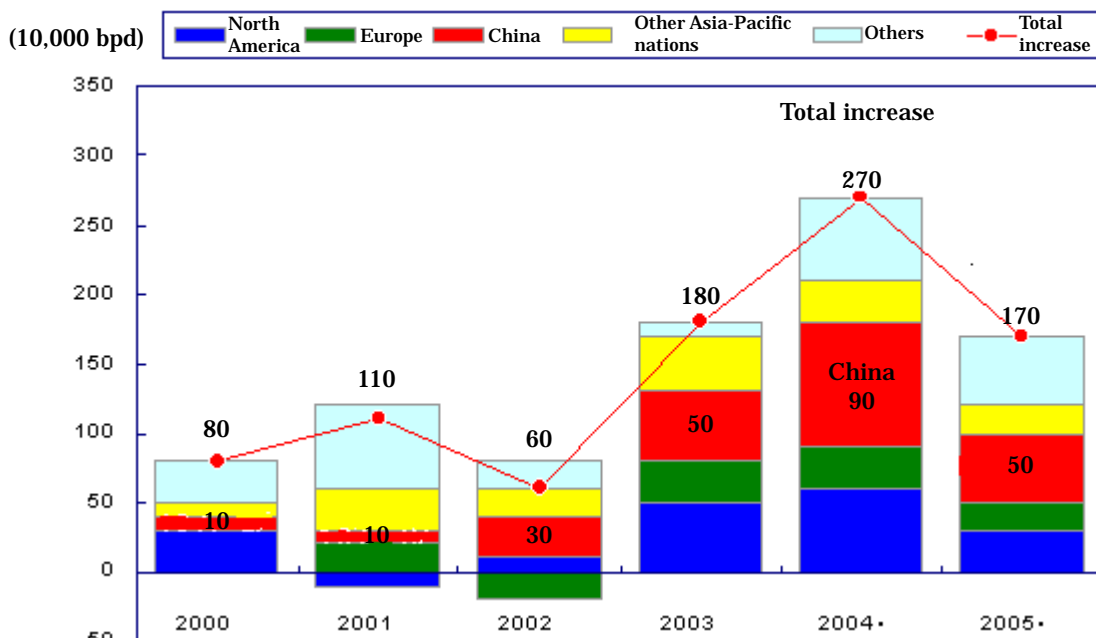
2. Factors behind Oil Price Upsurge

World demand for oil has consistently increased since the 1990s as the world economy has expanded smoothly, according to the IEA Oil Market Outlook and the like. On the other hand, the WTI crude oil futures price followed a downward trend until around 1998 before turning up. In particular, the price has skyrocketed since 2002.

Details of demand indicate fast growth in China and North America (including the United States), which has apparently worked to tighten the demand/supply balance on the market. Since 2002, oil demand has increased at an annual pace of 1.8 million to 20 million bpd. Almost a half of the increase was seen in the United States and China (see Figure 2). Particularly, China's oil demand increase has been conspicuous, accounting for 30% of the global growth. In this context, China shifted to a net oil

importer in 1993 and has gradually expanded imports. Recent oil imports totaled nearly 3 million bpd.

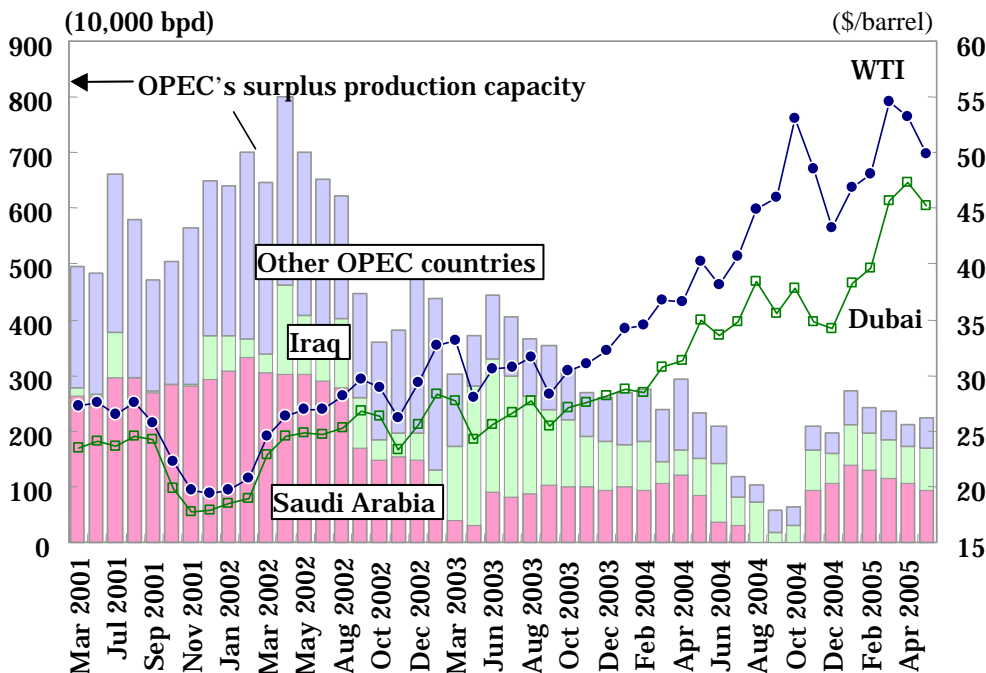
Figure 2 Growing Oil Demand



Sources: "Oil Market Report," IEA; etc.

Global oil production capacity has changed little since the early 1970s as new oilfield development stagnated in the Middle East on weak prices in the 1980s. The IEA Oil Market Report shows that oil production capacity in 11 OPEC countries had remained above 30 million bpd with no net increase between the 1970s and 1990s before falling slightly in 2000. As a result, OPEC's surplus oil production capacity, though fluctuating temporarily, had remained at around roughly 6 million bpd. Since 2000, however, the surplus capacity has declined on global demand growth. In particular, the surplus capacity slipped below 1 million bpd in the autumn of 2004 before recovering somewhat (see Figure 3).

Figure 3 Decline in OPEC's Surplus Oil Production Capacity



Sources: "Oil Market Report," IEA; etc.

Meeting such demand/supply balance and surplus production capacity, oil prices have turned up since late 2001. Unlike the sharp price hikes seen in the 1970s, the latest spike has emerged from the market on tightening demand/supply balance as demand has increased against leveling-off supply capacity. As oil demand has increased on the world economy's sustained growth, a successive series of developments destabilizing oil supply have occurred since 2003. They include the confusion accompanying the Iraq War, Russia's Yukos problem, Venezuela's political instability, Nigeria's strikes, losses from large hurricanes in the Gulf of Mexico and the Middle East's instability. As surplus production capacity is declining, oil prices are expected to rise easily on the market in response to any development that indicates a temporary supply constraint. Growing expectations of higher oil prices prompt investors outside the oil industry to take advantage of globally low interest rates by pouring short-term surplus money into the oil market in pursuit of capital gains. Such moves have accelerated the oil price upsurge. Such speculative money inflow basically represents arbitrage trading (taking advantage of price gaps between different times) and contributes to stabilizing prices for a certain period of time. In 2004, however, these investors posted net purchases, contributing to boosting oil prices.

3. Features of the Oil Price Upsurge

The current oil price upsurge has basically accompanied a global demand increase, as noted earlier. In this sense, it is in line with the market mechanism. Since the short-term price elasticity is limited, the price hike does not affect demand considerably. However, any excessive price hike could affect world economic growth and lead to a decline in demand and to lower prices through the income effect. Accordingly, if conditions are so that the market mechanism moves soundly, any excessive price hike may be corrected automatically, and any hike that is sharp enough to bring about a demand decline may be avoided.

As noted earlier, the inflow of short-term speculative money has surely accelerated the current price hike. Demand emerging from speculative money investment is temporary, and speculative investors may not use oil they purchase. However, they may sell back the oil to become suppliers in the future. As long as persistent demand expansion and price hikes attributable to speculation continue under current ultra-low interest rates, the possibility of worthwhile profits is high. If the oil price upsurge leads to widespread inflation and interest rate hikes, opportunity costs for speculative money may increase. This may prompt speculative investors to sell back oil, allowing oil prices to decline. In such case, monetary tightening may cause a slowdown in the world economy, leading to lower oil demand. Oil prices may then collapse on an eased demand/supply balance. Either way, speculative investment is aimed at intertemporal arbitrage (taking advantage of price gaps at different times), and therefore, it is hard to believe that the price hikes will be sustained. Furthermore, oil price hikes cannot be sustained because they stimulate the development of new oilfields and the development and utilization of new energy sources over the medium or long term. Over the short term, abundant official oil reserves and private inventories may work to deter excessive price hikes.

4. Oil Price Upsurge's Macroeconomic Effects – Theoretical Effects

What macroeconomic effects will the oil price upsurge have?

The first is the terms of trade effect, or the income transfer effect. The price elasticity of oil demand is extremely limited over the short term, and any price hike does not cause any sharp decline in demand. Therefore, oil demanders may make additional payments meeting price hikes to suppliers. In effect, some of demanders' income is transferred to suppliers. Japan, which depends almost fully on foreign countries for oil supply, makes additional payments, meeting price hikes, to overseas oil-producing countries, and some income is transferred to them as payments for imports. A country

that domestically produces oil may transfer income depending on import volume.

The second is a change in the income distribution through the oil price hikes' ripple throughout domestic prices. For a country that depends fully on imports for oil supply, the price effect is the same as the income transfer effect. The oil price hike, unless passed on to consumers, may deteriorate corporate earnings. If the hike is passed on to consumers, corporate earnings may remain unchanged with consumers shouldering the cost in the form of purchasing power losses.

The first and second effects mean that gross demand declines on the loss of domestic purchasing power. If a country receiving the income transfer spends such a transfer sufficiently on massive consumption, no demand loss may emerge for the entire world economy. Generally, however, oil-consuming countries have a higher propensity to consume than oil-producing countries. Therefore, global demand may decline on such an income transfer.

The third effect is on supply, rather than on income or demand. As long as production technology remains unchanged, a company may combine capital, labor, energy and other production factors to minimize costs and employ the optimum combination into production. This means that production factors' optimum shares for input may depend on their relative prices unless production technology changes. If oil prices rise substantially, production factors' relative prices may change dramatically, and any optimum combination to minimize costs may then fail to work. If the company were to maximize profit under the existing technology in response to new prices, it would have to cut production.

From the viewpoint of demand, the income transfer may cause a short-term demand shortage that reduces the size of the economy. In the long run, optimum production may grow more difficult to maintain from the viewpoint of supply. This may lead to a decline in production. As a result, demand and supply may decrease together to match each other.

5. Effects of Oil Price Upsurge

Let us look at the terms of trade effect among the effects of the oil price upsurge on the economy. Paying attention to limited price elasticity of oil demand over the short term, I first estimated an income transfer (an increase in import value) that results from an oil price hike of \$10 per barrel in 2002 and 2003. The ratio of oil imports to gross domestic product is roughly 1% for each importer. For both years, the income transfer's ratio to GDP is 0.4% for the United States, Japan and China. An average ratio for seven European countries comes to 0.3%. The lower percentage for Europe indicates

that Britain, as an oil-exporting country, receives an income transfer (through an increase in export value). Whether such a percentage is viewed as large or small may be controversial, but for the two years, however, these nations achieved higher economic growth than such ratio, indicating that they were able to fully absorb the oil price hike.

Table 2 Income Transfer Effect of \$10-Per-Barrel Oil Price Hike

	Japan	U.S.A.	Europe				China	ROK
				Germany	Britain	France		
2002								
Value (\$1 million)	16704	41882	23943	7441	-3483	6925	5404	7068
Ratio to GDP	-0.4%	-0.4%	-0.3%	-0.4%	0.2%	-0.5%	-0.4%	-1.3%
Reference								
Crude imports' ratio to GDP	1.2%	1.0%	0.8%	0.9%	-0.5%	1.2%	1.2%	3.5%
2003								
Value (\$1 million)	18,628	46,812	26,784	7,913	-2,548	7,004	7,697	8,366
Ratio to GDP	-0.4%	-0.4%	-0.3%	-0.3%	0.1%	-0.4%	-0.5%	-1.4%
Reference								
Crude imports' ratio to GDP	1.2%	1.2%	0.8%	0.9%	-0.4%	1.1%	1.6%	4.0%

Sources: "National Income Statistics," Cabinet Office; etc.

The spot Dubai crude oil price, which has a major bearing on Japan, rose from \$20 per barrel in early 2002 to a monthly average above \$50 per barrel in June 2005. After the hike of more than \$30 per barrel, the price is still rising. The hike is larger than the rise from \$3 to \$12 per barrel during the first oil crisis and the increase from \$13 to \$43 per barrel (each for Arabian Light) during the second crisis. How would the effects of the current price hike be compared with the rises during the two oil crises in the 1970s? In its "Japanese Economy 2004," the Cabinet Office compared the terms of trade effects of oil price hikes. While the income transfer effect is limited to a rise in import value, the terms of trade effect represents a comprehensive effect including exchange rate changes as well as an export price hike that offsets part of the income transfer. The terms of trade effect also allows us to track changes from the time when oil prices began to rise.

According to the Cabinet Office, the terms of trade deteriorated rapidly, by 20%, from the fourth quarter of 1973 to the first quarter of 1974 as the price hike came over a short term during the first oil crisis. Losses were equivalent to 3.0% of GDP, and oil prices remained high later with no improvement seen in the terms of trade. The income transfer effect was almost the same as the terms of trade deterioration. A key point for the first oil crisis is that as the change in the terms of trade met the oil price hike, Japan failed to offset any part of the income transfer with an export price increase

reflecting the oil import cost rise.

During the second oil crisis, oil prices gradually rose from the fourth quarter of 1978 through the first quarter of 1980. The terms of trade deteriorated gradually and the accumulative deterioration reached nearly 40% in the first quarter of 1980. The deterioration exceeded the level attributable to oil price hikes by some 10 percentage points and included the adverse effect of the yen's depreciation that began simultaneously with the oil price hikes. The overall income transfer's ratio to GDP peaked at more than 5% in the first quarter of 1980, including more than 3% in the effect of oil price hikes alone. Later, oil price hikes were passed on to export prices and the yen appreciated somewhat, leading to some improvements in the terms of trade and a decline in the income transfer.

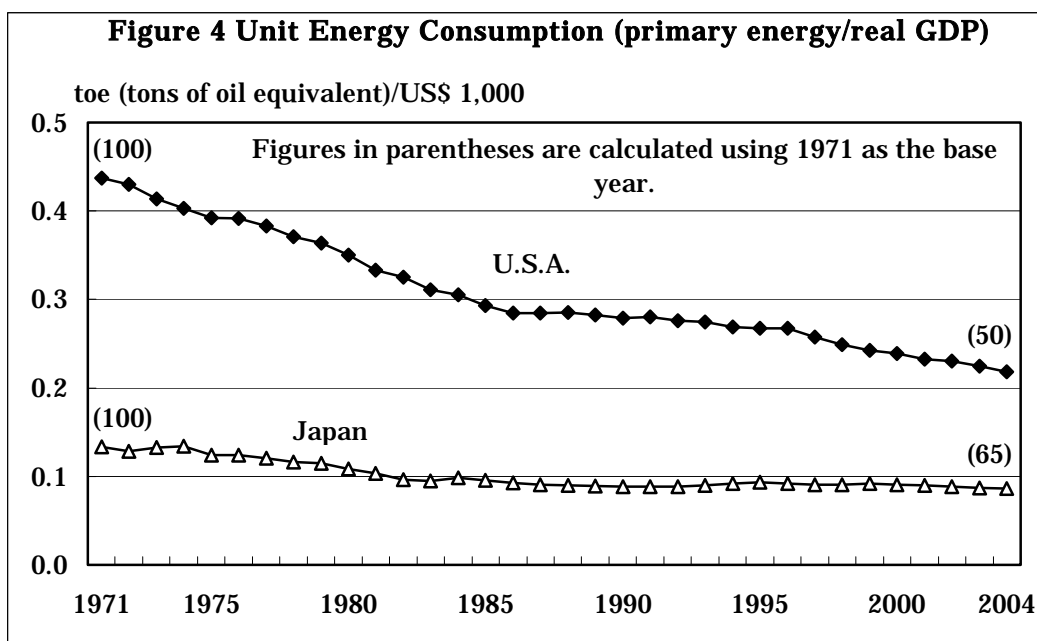
Although the current oil price hike has been substantial, the deterioration in the terms of trade has been limited to some 10% even three years after oil prices began to rise in the first quarter 2002. The overall deterioration exceeded the effect of oil price hikes alone and included the yen's slight depreciation and hikes in prices of raw materials, including iron ore. An income loss on the deterioration in the terms of trade is limited to some 1.0% of GDP. The deterioration in the terms of trade and the income transfer this time have been limited as oil's share of overall imports has declined to limit an overall import price hike to a smaller level than the oil price hike and as oil imports' ratio to GDP has declined from 5% during the first oil crisis to the recent level of 1%.

Next, I would like to consider the oil price hikes' effects on overall prices and corporate earnings. The domestic corporate goods price index has been posting a year-to-year rise of around 1% due to the oil price hike and other factors. However, the consumer price index has remained below the year-before level. Oil and other raw material price hikes have been passed on to intermediate goods, leading corporate goods prices to rise in line with cost increases. Amid keen competition, however, they have not spread to final goods yet. Has such a price trend affected corporate earnings? According to the Finance Ministry's statistics on financial statements of incorporated businesses for the first quarter of 2005, pretax profit's ratio to sales stood at the same level as in 1988 during the economic bubble period for both manufacturing and non-manufacturing industries, and profit growth was high. It is difficult to find any adverse effect of oil and other raw material price hikes on corporate earnings. Corporate earnings have

continued to improve amid the current economic recovery. Profit increased initially on personnel cost reductions through the promotion of restructuring. Recently, a sales expansion has been combined with the personnel cost reductions to accelerate profit growth. Oil and other raw material price hikes started on the beginning of the current economic recovery. Industrial material manufacturers have absorbed oil and other raw material price hikes by passing the cost increase on to their products. Others have absorbed their cost increase by containing personnel costs and expanding production to raise productivity, without raising prices of final goods. Unlike the two oil crises in the 1970s, the current oil price upsurge has not led to overall price hikes or corporate earnings deterioration.

6. Reasons for Limited Effect of Current Oil Price Upsurge

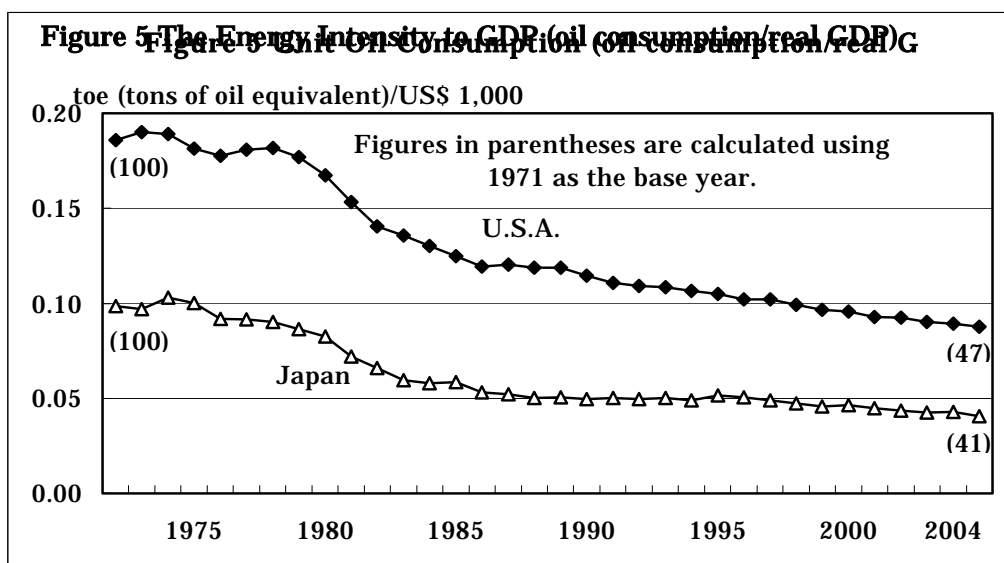
As reviewed above, all effects of the current oil price upsurge have been smaller than those of past oil price upsurges. Why are these effects smaller?



Sources: "National Accounts," Cabinet Office; etc. Based on the exchange rate in 1995.

One reason is the improvement in the efficiency of energy and oil utilization. Since the first oil crisis in 1973, Japan has continued energy-saving efforts and reduced its dependence on energy. This has been combined with the diversification of energy sources to reduce the effect of oil price hikes. Individual companies have improved their energy efficiency and the industrial structure has been transformed into one featuring a lower dependence on energy. As a result, the energy efficiency for the entire Japanese

economy has been improved dramatically. The energy intensity to GDP (see Figure 4) has been improved by 34% in Japan since the late 1970s and by 50% in the United States. The smaller improvement in Japan indicates that the energy efficiency in Japan in the late 1970s had been higher than in the United States. Next, Japan's energy intensity to GDP has remained at a half of the U.S. level since the early 1970s (see Figure 5), indicating Japan's higher efficiency. In the 30 years since the second half of the 1970s, the energy intensity to GDP improved substantially, declining by about 60% in Japan and by about 50% in the United States. The current oil price upsurge should have affected the optimum input of production factors, but the reduced dependence on oil on the improvement of oil consumption efficiency since the first oil crisis in 1973 has been coupled with the diversification of energy sources to considerably reduce the effects of the oil price upsurge on production. The improvement in the oil consumption efficiency has led to a decline in oil imports' ratio to GDP from 5% in the 1970s to the recent level of 1%. The decline in oil imports' ratio to GDP has worked to reduce the income transfer on the oil price hike.



Sources: "National Accounts," Cabinet Office; etc. Based on the exchange rate in 1995.

The differences between the economic environments in the 1970s and present might have also contributed to reducing the effects of the oil price upsurge. In the 1970s, the U.S. economy remained slack for a long time, faced with a high inflation rate and low economic growth. In international finance, the dollar grew more destabilized. The first oil crisis came just after the collapse of the Smithsonian monetary system, and the dollar had been depreciating during the second oil crisis. In contrast, there has been no

concern regarding inflation, although concern on deflation has emerged temporarily. Global economic recovery has been under way, and reflecting the robust U.S. economy, the dollar has been relatively stable against other major currencies. Let me make some points regarding the economic environment differences.

First, exchange rates have changed dramatically. The Japanese yen's value against the dollar has doubled since the 1970s. This has contributed to lowering Japan's income transfer on the oil price hike by making a yen-denominated price hike smaller than a substantial dollar-denominated price rise. This is the same case with the EU, though not with China, which has pegged the yuan to the dollar.

Second, economic growth has changed. This time, major countries have achieved relatively higher economic growth rates that are somewhat different. They have fully offset the income transfer on the oil price upsurge with an income rise on economic growth.

Third, the inflation environment has changed. In the 1970s, oil price upsurges came amid global inflation. Tough monetary tightening was required to cope with inflation and inflationary expectations, which grew easily. This time, however, deflation or low inflation has continued, making it difficult for inflationary expectations to grow even on the oil price runup. It has been easier for monetary policy to respond to any concern about inflation.

Fourth, long-term interest rates have been stable at low levels. In spite of smooth global economic growth and interest rate hikes in the United States and some other countries, long-term interest rates in the United States and other countries have remained at low levels, contributing to accelerating their economic growth and making the effects of the oil price upsurge less visible. The low long-term interest rates are attributed to low inflationary expectations and recycling of surplus money in China and other countries. However, it is difficult to identify any factor behind low long-term interest rates. We may have to keep a close watch on the future trend of long-term interest rates.

Fifth, the labor market has changed. During the two oil crises in the 1970s, the labor market was relatively rigid, lacking flexibility in wage determination. Labor's relative share of income was rising or leveling off, and such labor market conditions affected companies' flexible input of production factors and made it difficult for companies to absorb costs. This time, however, labor's relative share of income has generally declined in major industrial countries. Even upon the oil price upsurge, companies have replaced production factors under the flexible labor market, absorbing

cost increases by holding down wages. Even without raising product prices, companies have absorbed cost increases and secured their earnings without curtailing production.

7. Various Institutes' Model Simulations

I have reviewed the effects of the oil price upsurge and reasons why the effects of the current price hike are less serious than those of such hikes in the 1970s. Here, I would like to consider the magnitude of the effects of the oil price upsurge using quantitative macroeconomic models. The IEEJ and Cabinet Office in Japan, as well as the IEA, OECD, IMF, ADB and other international organizations and research institutes, have conducted model-using simulation analyses. The IMF analysis was rather old, having been conducted in 2002, and other analyses were done in 2004. Presumed oil price hikes differ depending on the timing of the analysis, but most of them indicate a \$10 per barrel rise. Only the OECD analysis focuses on inflation arising from the oil price upsurge and deals with two hypothetical cases – one for a monetary policy tolerating inflation and another for such a policy fighting against inflation (see Table 3).

Table 3 Various Model Simulations

		Effect on real GDP			
		Japan	U.S.A.	China	World
Institute of Energy Economics, Japan (2004)	Import price: \$43 (Rising by \$9 in 2005)	-0.40%
Economic and Social Research Institute, Cabinet Office (2004)	Import price: \$50 (Rising by \$17.2 from \$32.8 in Q1 2003 and remaining at \$50 for one year)	-0.45%
International Energy Agency (IEA) (2004)	Up \$10 (Rising from \$25 to \$35 and remaining at \$35)	-0.40%	-0.30%	-0.80%	-0.50%
Asian Development Bank (ADB) (2004)	Up \$10 (Unchanged until Q1 2005)	-0.40%	...	-0.60%	...
	Up \$10 (Unchanged until 2005-end)	-0.50%	...	-0.80%	...
Organization for Economic Cooperation and Development (OECD) ((2004)	Up \$15 (Rising from \$32 to \$47 temporarily)	(Effective interest rates remain unchanged)			
		-0.60%	-0.55%	...	-0.45%
International Monetary Fund (IMF) (2000)	Up \$5	(Nominal interest rates remain unchanged)			
		-0.35%	-0.30%	...	-0.25%
		-0.20%	-0.40%	-0.40%	-0.30%

Sources: "Analysis of the Impact of High Oil Prices on the Global Economy," IEA; "Economic Outlook," OECD; "Japanese Economy 2004," Cabinet Office; etc.

In such a simulation, researchers change only the oil price among exogenous variables for the standard case and look into how endogenous variables respond to the oil price change. The simulation is thus aimed at extracting only the oil price effects. In reality, however, not only oil prices change in any national economy, all economic variables including other exogenous ones may change simultaneously and each variable depends on the others. Therefore, it is difficult to compare any simulation result and the real economic situation. Furthermore, oil prices are treated as an exogenous variable and separated from responses to economic activity changes, while the current oil price hike is attributable primarily to real national economic activities. In this sense, such a simulation contains limitations. As the linearity is presumed for many models, doubling of a price hike leads to doubling of its effect. As far as such models are used, any simulation may indicate an oil price hike affecting economic activities.

The IEEJ simulation analysis indicates that GDP declines 0.4% on an oil price hike of \$9 per barrel in 2005. The magnitude is almost equal to estimates given by international organizations. The simulation by the Cabinet Office Economic and Social Research Institute indicates that GDP falls 0.45% on an oil price hike of \$17.2 per barrel. This effect is smaller than those estimated by the others.

International organizations use global models where oil price effects on the world economy can be observed. According to their simulation, an oil price hike may affect China seriously. Effects may be less serious on the United States than on Japan. This is because effects on the Japanese economy include not only direct effects of oil price hikes but also spillover effects emerging from those on the United States and China through international trade.

An income transfer was earlier estimated at 0.4% of GDP on an oil price hike of \$10 per barrel and at 1% of GDP on terms of trade effect on a hike close to \$20. This does not differ far from international organizations' simulation results. Income transfers represent an effect on a country as earlier shown. International organizations' simulation results cover international linkages and indicate greater effects on Japan than a single-country analysis. They thus hint that if oil prices continue to rise, the Japanese economy could face indirect effects through trade with China and other foreign countries, as well as direct effects that may be limited. While these simulation analyses view any effect of price hikes as proportionate to such hikes, the longer continuation of price hikes is likely to bring about a fast increase in their effects.

8. Future Prospects

Oil price hikes have continued, with the WTI crude exceeding \$65 per barrel in August. So far, oil prices have fallen short of affecting national economies seriously, and income growth has fully absorbed cost increases. The world economy sees relatively ample labor supply and undercapitalization as China and Eastern Europe shift to market economies. Therefore, companies do not have to shoulder the cost of oil price hikes. Instead, households with slow income growth bear such costs. Even though oil price hikes have had no serious effects on national economies, the risk of serious effects on economies may be accumulated on a long continuation of price hikes. Over the short term, no increase is expected in surplus oil production capacity and oil demand is likely to remain firm. Even if current oil prices are excessively high, they cannot be expected to fall fast and stabilize at lower levels. Oil prices may go up or down in response to various future developments. Excessive oil price hikes could have serious economic effects and lead to less demand and lower prices. However, the current oil price hikes have basically originated from an increase in demand through the market. If disturbances caused by speculative money diminish, oil prices may stabilize.

Over the medium or long term, oil prices will depend on production capacity and national economic situations including oil demand, and quite a few people are optimistic about oil supply. The present high oil prices can stimulate the development of alternative energy sources and new oilfields, leading to a gradual increase in supply. However, whether such a supply increase could meet the demand rise is uncertain. Problems exist with state-run and other public entities' engagement in oil production. Particularly, large oil-producing countries such as Middle Eastern nations and Russia have failed to efficiently develop oilfields. On the other hand, oil demand will depend on economic conditions in the United States and China, which have led demand expansion over the past several years. I would like to consider national economic conditions.

8-1 Japanese Economy

The Japanese economy has continued annual growth close to 2% since 2003. In the face of a decline in productive population, however, Japan cannot be expected to achieve high growth. The government's "Structural Reform and Medium-Term Economic and Fiscal Perspectives" and "21st Century Vision" projects future annual economic growth at around 1.5%. Expecting a decline in labor input, they envisage considerably high total factor productive growth that would have to be sustained. Budget deficits are enormous, with massive government debt issues planned for the

future. It is feared that the savings rate will decline on the aging population. Japan is now required to increase investment accompanied by technological innovation and efficiently restructure its economy. Since the enhancement of energy efficiency is expected to continue, Japan's oil demand is likely to slowly increase.

8-2 U.S. Economy

Even with huge budget and trade deficits, the U.S. economy has continued powerful growth and is forecast to achieve potential growth above 3% in future. Short-term interest rates may soon be raised to 4%, a level neutral to the economy. In spite of the recent gradual hike in short-term interest rates, however, long-term interest rates have been falling, as noted earlier. The low long-term interest rates might have stimulated residential and non-residential investment. Given this phenomenon, the present growth base is not necessarily secure. Short-term economic fluctuations are likely. Among industrial nations, however, the United States features a high population increase. Even though it may be difficult for the U.S. economy to sustain such high growth as seen in the past years, the economy can be expected to maintain growth meeting the potential level that would be above 3% or slightly lower than the recent growth. Therefore, U.S. oil demand is expected to remain firm. Despite the considerable improvement in energy efficiency over the past three decades as noted above, the United States can afford to make further improvements. Therefore, future oil demand growth may become slower than the present growth.

8-3 EU Economy

After recovering until 2004, the Euroland economy has seen deterioration of economic sentiment due to sluggish exports on the rising euro. In the area, economic growth and inflation gaps are large between major and minor countries, indicating difficulties facing monetary policy for the single-currency zone. The euro's strength is being corrected in response to problems regarding the ratification of the EU constitution. For the short term, an exchange rate problem as an obstacle to economic recovery is diminishing. How political instability would affect economic growth and would be a problem over the long term. Over the medium or long term, however, the EU economy is likely to sustain the past average growth of around 2%, even with short-term fluctuations. EU oil demand is thus expected to moderately increase.

8-4 Chinese Economy

The Chinese economy has sustained annual growth close to 10%, but some

problems have made it difficult for the economy to sustain such high growth.

First, China has problems regarding exchange rates. In July, China shifted from the yuan's complete peg to the dollar to a managed floating exchange rate system. However, little exchange rate fluctuation has been seen. Under the yuan's fixed peg to the dollar, a large international payments surplus had worked to ease domestic monetary conditions. In 2003, excessive domestic monetary easing was feared to bring about overheating on rural capital investment. China then took anti-overheating measures including interest rate hikes, changes in reserve requirements and window guidance. These measures produced some effects in the second half of 2004, but the international payments surplus has remained enormous, exerting pressures on domestic liquidity to ease. At present, easing liquidity still remains under control, falling short of leading to any serious domestic inflation problem. Capital flow regulations have become ineffective, allowing capital inflow to increase fast. This indicates that the Chinese economy faces a classic problem that up to two of the three monetary policy objectives – free capital flow, exchange rate stability and independent monetary policy – can be achieved simultaneously. Theoretically, it is desirable to increase the freedom of exchange rates to address the current situation. This may be a reason why China changed the foreign exchange rate system. However, the degree and speed of the exchange rate realignment and its effects on the Chinese economy are uncertain. Wild exchange rate fluctuations could affect economic growth through the deterioration of net exports. Given economic gaps and linkages between China's domestic regions and the mobility of labor and capital, doubts emerge on whether China should maintain a single currency. Depending on the speed of exchange rate realignment, the problems could grow more serious.

Second, China has various structural problems including underdeveloped infrastructures including water and electricity supply, and widening income gaps between regions. Potential problems, which have yet to emerge amid sustained growth, include inefficient management of state-run corporations and non-operating loans.

Third, China, which is consuming massive amounts oil and other primary resources, has utilized such resources inefficiently and wastefully. Rapid domestic economic growth has prevented this problem from emerging. The costly production structure with the inefficient resources utilization may soon come to a deadlock, slowing down economic growth. Exchange rate fluctuations could lead this problem to come into focus more clearly.

Fourth, China has problems with the efficiency in utilization of labor and capital, though having abundant labor and capital with a high savings rate as

requirements for economic growth. The problems must be solved. The Chinese situation is similar to the Singaporean situation as described by Paul Krugman in his "Myth of Asia's Miracle" in 1994. Krugman doubted the sustainability of Singapore's high economic growth that he said was attributable to excessive input of production factors and failed to be accompanied by total factor productivity growth in the absence of domestic technological development. Later the Singaporean economic growth plunged on the Asian currency crisis, but this was not attributable to the problems that Krugman pointed to. However, Singapore's distribution of resources then had complied with market economy principles. China lacks efficiency in the distribution of resources and the utilization of production factors, and this could work to limit economic growth.

While various structural problems lead many people to doubt if China could sustain the current high economic growth over the medium or long term, the Chinese economy is likely to grow relatively faster than other economies. Its oil demand can be expected to increase steadily, although an increase as fast as in the past is unlikely.

The United States and China will have a great influence on global oil demand over the medium or long term; however, U.S. economic growth may slow down to the potential level, and Chinese growth may drop slightly in correction to the past high growth. If no sharp rise comes in economic growth of other major countries, global income growth may slow down somewhat and grow in a more stable and sustainable manner. Under such economic developments, global oil demand cannot be expected to continue such fast growth as seen in the recent years, but it may grow steadily. As a result, oil supply capacity may increase according to demand growth over the medium or long term. Given such a steady increase in oil demand and the stepped-up development and utilization of new energy sources, oil prices may stabilize in terms of relative prices reflecting price conditions in industrial countries.

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