

Destabilization of the Crude Oil Market and Efforts Toward Price Stabilization♦

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Summary

With crude oil price largely fluctuating, both oil producing and consuming countries have come to identify the challenges brought by the destabilization of crude oil price. Among those, there have been discussions on fair price, that is, the price level which both consuming and oil producing countries can accept. It is, however, difficult to specify a particular price level as a fair price. It is reasonable to understand that a fair price is determined by the price level obtained as a result of the pursuit of stabilization of the crude oil market by both oil producing and consuming countries.

As measures for stabilization of the crude oil market, it is important to form a mechanism that provides the market with balanced information that will avoid unnecessary price fluctuation, taking into account the recently increasing importance of “market sentiments” and “information” in price formation. It is furthermore meaningful that both oil producing and consuming countries ensure enough flexibility to absorb the occurrence of unexpected phenomena in terms of supply and demand. It is also important to ensure a diversity of market players and design a system where the market mechanism is exerted to the utmost extent.

Introduction

As crude oil prices continue to fluctuate, both consuming countries and oil producing countries have had a growing interest in problems brought by the destabilization of crude oil price since 2007. Under such circumstances, there have been discussions on fair price, that is, the price level which both consuming countries and oil producing countries can accept, and discussions on “price band,” that is, the idea that crude oil price should be controlled within a certain range. Section 1 of this paper briefly introduces such recent discussions on fair price and price band, and Section 2 organizes problems that are brought by the destabilization of crude oil price. Section 3 then considers tasks and measures toward stabilization of the crude oil market in the future.

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1. Destabilization of the Crude Oil Market and Fair Price

1-1 Discussions on Fair Price

In response to the volatility of crude oil price from 2007 onwards, summit/cabinet-level representations of various countries have come to present remarks about the fair price of crude oil and to hold discussions on price band. With regard to a fair level of crude oil price, King Abdullah of Saudi Arabia mentioned in November 2008 that the fair crude oil price is \$75/bbl¹. President Dmitry Medvedev of Russia also said during the G8 Summit in July 2009 that desirable crude oil price is \$70/bbl to \$80/bbl². From the standpoint of the corporate sector, ENI indicated, in a document published in May 2009 in preparation for the G8 Energy Ministers Meeting, an estimate to the effect that \$60/bbl to \$70/bbl is a fair price, taking the current market circumstances into consideration.³

Additionally, there have also been remarks about price band.⁴ In July 2009, Prime Minister Gordon Brown of the United Kingdom and President Nicholas Sarkozy of France contributed to an article in the Wall Street Journal, making the assertion that oil producers should agree to a price range that is based on long-term fundamentals factors, and the price range should be at a level that is neither high to the extent of hampering economic growth nor low to the extent of inhibiting sufficient upstream investment as seen in the 1990s.⁵ Previously, Minister of Finance Palaniappan Chidambaram of India also questioned the legitimacy of crude oil price during that time exceeding \$100/bbl at a meeting between oil producing and consuming countries held in Jeddah, Saudi Arabia, in June 2008. He made an assertion that both oil producing and consuming countries should agree to specific maximum and minimum price limits. Oil producing countries have also expressed a view supporting the introduction of such a price band. Venezuelan Minister of Energy Rafael Ramirez made a remark regarding the level of crude oil price in April 2009 that an improved band system, which brings certainty and stability to both consuming countries and oil producing countries, is required, thereby showing an intention to request the introduction of a price band system between \$80/bbl and \$100/bbl within OPEC⁶.

Behind a series of these remarks are increasingly destabilizing crude oil price and the awareness of problems that arise therefrom. To be mentioned later, the volatility of crude oil price brings about major challenges both in the short and long terms. Remarks about fair price and price band can be better understood as expressions of strong will of the parties concerned to increase the

¹ *Arab News*, November 30, 2008.

² *Reuters*, July 9, 2010.

³ ENI Strategies & Development Department, *A Blueprint for Oil Price Stabilization* (May 29, 2009).

⁴ The price band system is a system that was originally introduced by OPEC in 2000. It is a mechanism in which OPEC Member Countries adjust oil production so as to keep the basket price (average price) of crude oil designated by OPEC within the range of \$22 to 28/bbl. Under this system, where the basket price is above \$28/bbl or below \$22/bbl over 20 days, OPEC Member Countries are supposed to automatically increase or decrease production respectively. However, the system was actually put in motion only once. Although crude oil price has continued to largely exceed this range since 2003, OPEC has never increased production based on this price band system, asserting that the price increase is due to a speculative factor. This system has become a dead letter thereafter.

⁵ Gordon Brown and Nicolas Sarkozy, "We Must Address Oil-Market Volatility," *Wall Street Journal* (July 8, 2009).

⁶ *Bloomberg*, April 5, 2010.

predictability of future crude oil price by setting a specific anchor point in such a volatile, fluctuating crude oil market.

It is, however, not easy to specify the level of fair price and a price range for a price band, which both oil producing and consuming countries can actually accept. Oil producing and consuming countries have different opinions on the fair price level. Even among oil producing countries, each would have different opinions on desirable oil price level depending on such factors as the country's financial condition, population, degree of dependence on oil export in the entire economy, and diplomatic perspective. Fair price level and price band also change with the price increase rate and the effects of the macro economy for each occasion. The level of crude oil price permissible by the global economy should be different, particularly, between the time when the global economy maintains good conditions and during difficult economic times. In addition, taking into account the choice of energy resources at the stage of final consumption, not only factors concerning oil but also the development trends and prices of other competitive energy resources and costs associated with oil substitution technology influence the fair price level.

Even if a specific price level is set, the question remains by what means the set price level should be actually realized and maintained. From the standpoint of supply, there is a question of whether oil producing countries other than OPEC member countries (for example, Russia and Brazil) agree to adjust production. Even among OPEC members, production quota is often violated by so-called "cheating" activities of some member countries. From the standpoint of demand, a plausible option is to release state oil stockpiling held by International Energy Agency (IEA) member countries; but a question of whether such an operation is actually feasible still remains. Releasing of state oil stockpiling often requires complicated procedures and thus its effects may be limited by taking time to actual release⁷. As discussed later, some IEA member countries may not be willing to use their stockpiling for price adjustment. In this manner, although there has been growing interest in the setting of a fair price and a price band, there are many challenges that should be overcome first.

1-2 Fair Price as a Result, Not as a Purpose

As just described, it is difficult to set a specific price level or to seek a means for realizing such a price level while positioning a specific level of crude oil price as the final "purpose." However, destabilization of crude oil price like that seen from 2007 to 2009 bring about major problems to both oil producing and consuming countries, and oil producing and consuming countries share the awareness of the problem concerning this destabilized crude oil market. Therefore, even if it is difficult to share recognition of a specific price level and price range, oil producing and consuming countries can take common steps toward for the stabilization of crude oil price itself.

Based on the above, regarding fair price and price band, it is more appropriate to take an approach while seeing a specific price level as a "result" – both oil producing and consuming

⁷ Public announcement of such a release plan, though, may have some downward pressures on the oil market. This is called an "announcement effects".

countries take measures necessary to stabilize crude oil price, which is of high interest to both sides, and the price level obtained as a result of those measures is the level fair price – instead of an approach while seeking a specific price level as a “purpose” in an a priori manner. In other words, it is a price level at which both oil producing and consuming countries can minimize problems arising from the destabilization of crude oil price. This level of fair price therefore changes significantly depending on political and economic situations. In addition, there is no guarantee that the current price level obtained as a result of stabilization will continue to be the same year after year. Discussions about fair price naturally tend to be made over a specific price level. Yet such discussions are not productive and may invoke an unnecessary attempt to manipulate a certain price level. Fair price discussions should not be directed to a price level issue but, as discussed below, to a market stabilization issue.

2. Destabilization of the Crude Oil Market and Problems Thereof

Realization of a fair price is premised on the restraint of destabilization of crude oil price and the promotion of stabilization thereof. The term “destabilization of crude oil price”, however, are used to refer to different phenomena subject to the context of discussions. This section therefore first streamlines such different understandings, and then sums up problems brought by the destabilization of crude oil price.

2-1 What is the Destabilization of Crude Oil Price?

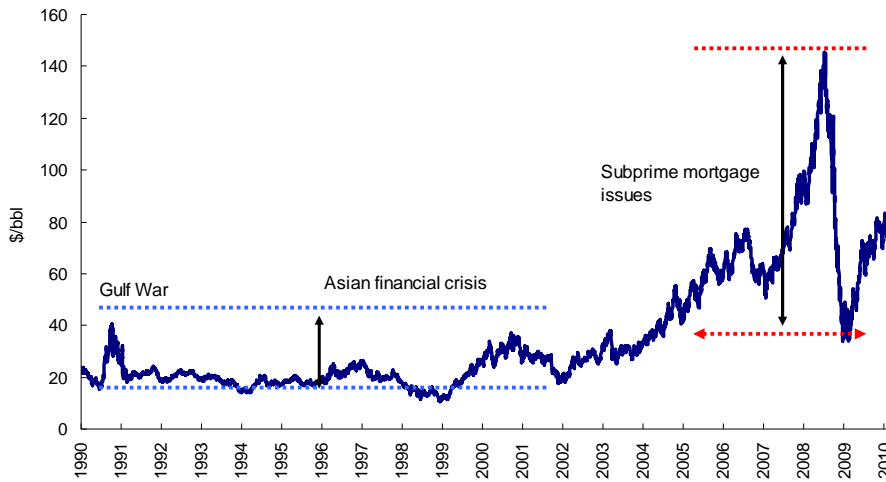
The destabilization of crude oil price that is now under discussion is roughly divided into the following three dimensions: (1) changes in the level of crude oil price during a certain prescribed period, (2) changes in the level of long-term futures price, and (3) daily volatility of crude oil price.

2-1-1 Changes in the Level of Crude Oil Price during a Certain Prescribed Period

First, most often taken into account in considering destabilization of crude oil price are changes in the level of crude oil price during a certain prescribed period. This is often called “price swing” problem. Fig. 2-1 shows fluctuations in crude oil price from the 1990s onwards. Throughout the 1990s, crude oil price hovered within the range of \$10/bbl to \$40/bbl, and fluctuations in crude oil price were relatively gradual compared to those at present day. However, in 2008, there was a phenomenon of crude oil price rapidly changing from the \$140/bbl level to the \$30/bbl level in a very short period of time, approximately six months.

In comparing price fluctuations for the period from the 1990s to the 2000s, it is, needless to say, necessary to take inflation into account. However, even taking it into account, the situation where crude oil price doubles over six months and then sharply drops to about one-fifth over another six months is a phenomenon peculiar to the latter half of the 2000s. In general, destabilization of crude oil price often refers to the occurrence of such sharp price changes in a very short period of time.

Fig. 2-1 Fluctuations in Crude Oil Price from the 1990s Onwards

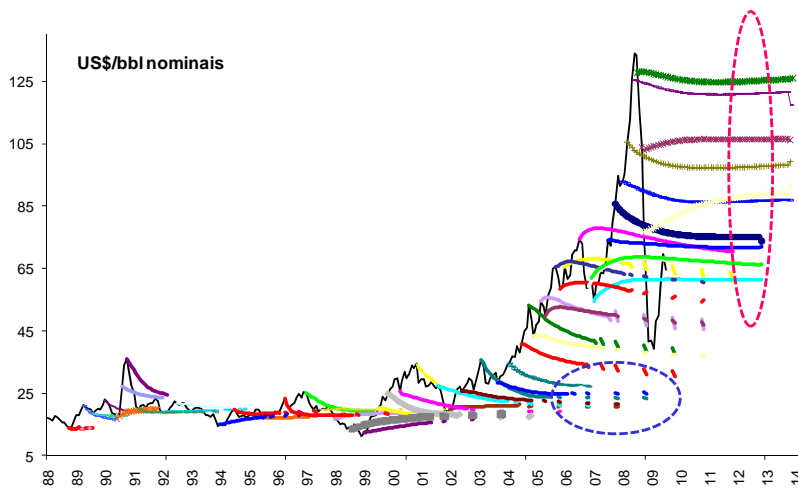


Source : U.S. Energy Information Administration; IEEJ

2-1-2 Changes in the Level of Long-term Futures Price

Next, as one of the aspects of destabilization of the crude oil market, the level of long-term futures price converged at the level of \$20/bbl to \$30/bbl from the 1990s to the middle of the 2000s, irrespective of the price level of current delivery. However, from around the middle of the 2000s, it has come to change significantly depending on the price level of front month (Fig. 2-2).

Fig. 2-2 Transition of Crude Oil Futures Curve from the 1990s Onwards



Source : Bassam Fattouh (2009); the original data is of Bloomberg.

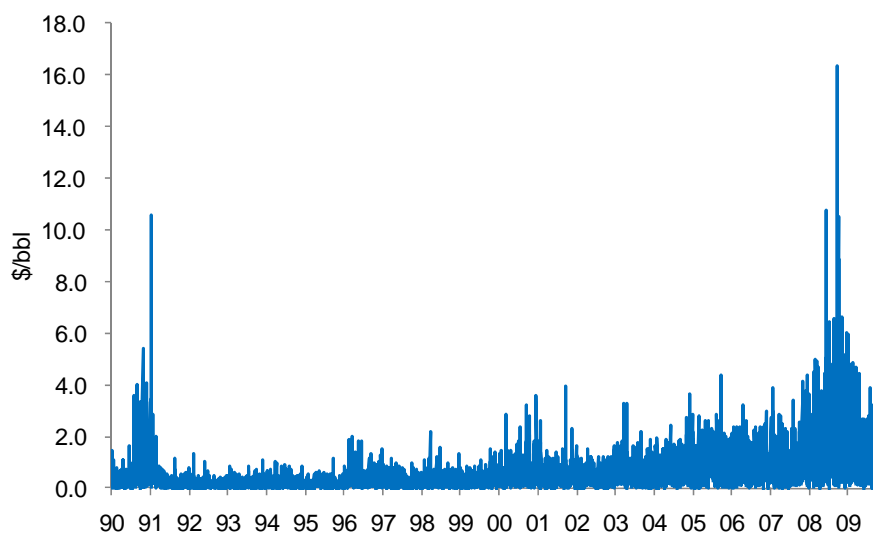
This means that market participants’ view on long-term price level has become largely affected by the price level of the time, in other words, that the level anticipated by the market – the level at which the price is expected to eventually settle down – has been lost. Such phenomenon is also sometimes cited as one of the phenomena that caused the current destabilization of crude oil price, in the sense that the sort of “anchor” that ties down fluctuations in the crude oil market has

been lost.

2-1-3 Daily Volatility of Crude Oil Price

Destabilization of crude oil price is sometimes referred to fluctuation in a shorter period. Actually, there were only limited cases, in which crude oil price changes by \$1/bbl or more per day, in the crude oil market of the 1990s. In the current crude oil market, however, it is by no means uncommon that the price changes by \$2/bbl to \$3/bbl in a day (Fig. 2-3). Based on this phenomenon, it is often pointed out that volatility has increased in the crude oil market.

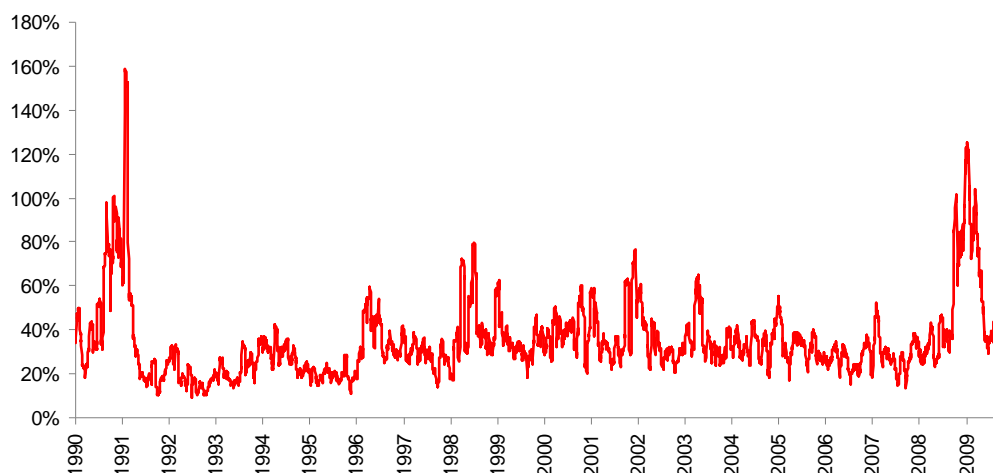
**Fig. 2-3 Volatility of Crude Oil Price from the 1990s Onwards
(absolute value of price difference compared to the day before)**



Source : U.S. Energy Information Administration; IEEJ

However, we need to be cautious in using the word “volatility” since the term is used with different meanings in oil industry circle and financial market. If we regard the volatility as the absolute value of daily price difference, to which oil industry often pays attentions, it certainly has increase since the 1990s as shown in Fig. 2-3. If, on the other hand, we consider the volatility as the rate of daily price difference, to which financial market player usually refer, it has not experienced a significant increase from the level of the 1990 (Fig. 2-4). This is because volatility used for analyzing asset price in the financial market is calculated based on the standard deviation of the rate of daily price change. In carrying out asset management, the rate of return to a certain amount of investment is important, and the absolute value of the daily price difference is not significant. The reason for no significant change in the level of volatility is, needless to say, that there has been no significant change in terms of the “rate of change” previously, even if the absolute value of the daily price fluctuation increased since the level of crude oil price itself significantly rose after entering into the 2000s from the 1990s. Therefore, it is necessary to take into account the difference between them when discussing “volatility” of crude oil price.

Fig. 2-4 Volatility of Crude Oil Price from the 1990s Onwards



Source : U.S. Energy Information Administration; IEEJ

2-2 What is Wrong with the Destabilization of Crude Oil Price?

Next, this section addresses problems brought by destabilization of crude oil price. In this part, destabilization of crude oil price is to refer to the price swing problem (2-1-1), and it is divided into problems brought by an excessively high price of crude oil and those brought by an excessively low price.

2-2-1 Problems Brought by an Excessively High Price

(1) Negative impact on the macro economy

First, negative impact on the global macro economy is one of the problems brought by an excessively high price. Oil products serve as sources of energy that support various economic activities, and increase in their price certainly leads to deterioration of economic activities using the products if other conditions stay constant. With regard to the degree of stagnation of economic activities due to increase in crude oil price, according to the analysis of the International Energy Agency (IEA) in 2004, the global GDP growth rate declines by 0.4% if crude oil price rises by \$20, though this analytical value is slightly old. Thus, it is widely known that an excessively high price brings about the deterioration of the global macro economy.

(2) Expansion of the global imbalance

Next, the problem of expansion of global imbalance is brought by an increase in crude oil price to the global economy. Global imbalance refers to the imbalance in the global current account. It refers to such phenomenon in which the United States has a large amount of current-account deficit while Asian and Middle Eastern countries have continuously increasing current-account surplus. It is noted that the expansion of such global imbalance brings about international capital movements, in particular, a rapid increase in capital inflow into the U.S. market and thereby, the financial sector is bloated, causing the problem of triggering risk-tolerant investments by financial

institutions. Although the United States is the world's leading oil producing country, which produces 7.2 million B/D, it is the world's largest oil importing country which imports oil of 11.5 million B/D⁸. An increase in crude oil price and an increase in the prices of oil products incidental thereto further increases the current-account deficit of the United States. An excessive increase in crude oil price brings about expansion of such global imbalance, and may consequently result in increasing vulnerability of the global economy.

(3) Rise of resource nationalism

What can be pointed out next is the rise of resource nationalism. Resource nationalism refers to the movements of countries possessing resources to strengthen state involvement in their own resources development and to expand profits obtained from the development through system reform such as alteration of tax rate or asset expropriation. When crude oil price is low, oil producing countries generally try to ensure a certain level of export earnings through the increase of production. Therefore, they tend to set operational conditions which are relatively friendly to oil companies operating within the countries. However, when oil price rises, it becomes possible to ensure sufficient export earnings without increasing production; therefore, oil producing countries come to attach harsh conditions to oil companies operating within the countries. Resource nationalism is indeed a big problem for oil companies operating in oil producing countries not only by reducing their revenues but also by limiting their investment opportunity under such an uncertain investment climate. From the standpoint of oil producing countries, if oil companies pull back investment in these producing countries due to such review of conditions on oil companies and thus cannot promote sufficient upstream development investment, resource nationalism may eventually become a negative factor for the countries' resources development and revenues. Economics principles tell that a higher price of a commodity will lead to an investment in production capacity of the commodity. In oil industry, however, this principle often does not hold, and price increase paradoxically brings about an investment slump.

(4) Problem of "resource curse"

An excessive appreciation of crude oil price has a negative impact not only on consuming countries but also on oil producing countries in the long term. One of the typical challenges is the "resource curse" problem. The resource curse problem refers to a phenomenon that countries with ample resources tend to be delayed in economic development compared to countries without resources. This phenomenon is explained by the following logic. In general, vast amounts of foreign currency flows in a country with export of resources, and the value of the country's home currency increases. Thereby, development of domestic manufacturing businesses is impaired, and consequently, industrialization that supports the country's economic development does not make progress.

In addition to resource curse, the problem of "monoculture economy" – a country's economic

⁸ Both figures are as of 2009. *BP Statistical Review of World Energy 2010*.

situations are greatly affected by fluctuations in export price of resources as a result of concentration of domestic factors of production on specific resources development/export sectors – becomes one of the causes of delay in economic development. This is because under a severe fluctuation of revenue inflow, the country would face a difficulty to manage its economy and thus delay its economic development.

For these reasons, although an excessive increase in crude oil price is beneficial to oil producing countries' economy in the short term, it is not always beneficial in the long term. Destabilization of crude oil price tends to inhibit creation of a more sustainable economic system through decentralization of economic structure.

2-2-2 Problems Brought by an Excessively Low Price

(1) Destabilization of political and economic situations in oil producing countries

While an excessively high price brings about various problems, an excessively low price also causes problems. One of such is the destabilization of political and economic situations in oil producing countries. Although a rise in crude oil price has a negative impact on the entire global economy, as far as the economy of oil producing countries goes, a sharp decline in crude oil price leads to serious economic problems. Oil producing countries in the Middle East and Africa significantly depend on the export of crude oil for their economy, and the negative impact of such large price slump will be felt severely. The problem goes beyond macro economy. Some oil producing countries maintain political unification through distribution of export earnings from oil within the countries. Decrease in distribution resource due to a decline in crude oil price therefore may trigger instability of domestic political situations. We should be aware that, because political turmoil in an oil producing country may affect the oil export from the country, this is also the issue for oil consuming countries.

(2) Increase in fossil fuel consumption and stagnation of alternative energy developments

Another negative impact brought by a low price is that a low price consequently brings about increase in fossil fuel consumption and stagnation of alternative energy development. In order to address global warming issues, efforts to reduce greenhouse gas emissions are now making progress all around the world. To that end, it is first necessary to increase the efficiency of the current energy use (energy saving) and then to convert fossil fuels that occupy the largest portion of the current energy supply in the world into alternative energy sources such as nuclear and renewable energy. In doing so, where crude oil price hovers at a low level, it is difficult to create sufficient economic incentive for promoting energy saving, and it is also difficult to promote the introduction of alternative energy sources that are relatively high-cost. In this manner, from the perspective of coping with the global warming issue, a low crude oil price could become a disincentive to the promotion of measures therefor.

(3) Stagnation of new upstream investment

Lastly, there is concern that restraint of new upstream development investment in the world due to excessive decline in crude oil price will tighten the market condition in the future. In recent years, reserves of easy oil have gradually depleted, and it has become necessary to undertake more technically complicated and higher-cost oil field developments in the future. The length of time required to develop an oil field therefore tends to be longer, sometimes more than a decade. Where there is a gap among such lead time required for upstream development, the timing of making a decision to invest therein and the timing of a demand increase in the future, a possible scenario where crude oil price rises sharply again due to tighter supply and demand conditions is plausible. In this way, an excessive decline in crude oil price brings about an increase in crude oil price in the long term, and thereby ignites the price swing problem in part.

3. Measures toward Stabilizing the Oil Market

The following table sums up possible measures regarding the stabilization of the crude oil market⁹. Such measures can be roughly divided into the following three areas: (1) provision of information to market participants, (2) increase of flexibility in terms of supply and demand, and (3) measures concerning a desirable market (Table 3-1). These measures have respective limits and problems. Such restraining factors against realization are also summed up in the following sections.

Table 3-1 Measures toward Stabilization

Provision of information to market participants	Increase of flexibility in terms of supply and demand	Measures concerning a desirable market
<ul style="list-style-type: none"> ▪ Balanced flow of information ▪ Development of statistics ▪ Continuation of dialogue between oil producing and consuming countries 	<ul style="list-style-type: none"> ▪ Increase of flexibility on the consuming countries' side ▪ Establishment of oil stockpiling in emerging countries and development of an operation system therefor ▪ Maintenance of spare production capacity ▪ Abolishment of subsidies in emerging countries ▪ Review of operation of oil stockpiling 	<ul style="list-style-type: none"> ▪ Ensuring of diversity of market participants ▪ Increase in the transparency of the OTC market transactions ▪ Increase of spot transactions

⁹ Stabilization refers to avoidance of excessive increase and decline in crude oil price thereafter.

3-1 Provision of Information to Market Participants

3-1-1 Balanced Flow of Information

What is first considered as a measure concerning provision of information to market participants is ensuring the fair and objective provision of information to the market. For example, *Monthly Oil Market Report* (OMR), published monthly by the International Energy Agency (IEA), and *World Energy Outlook* (WEO), published annually by the same organization, are information sources referred most widely by market participants in conducting their own transactions. Since information provided by the IEA in these publications is based on a purpose of warning against tighter supply and demand conditions, it sometimes results in fueling excessive concerns over tighter supply and demand conditions among market participants. As an agency representing the interests of consuming countries, the IEA naturally assumes the mission to sense possible tighter supply and demand conditions beforehand and to call on oil producing countries to make investment to enhance production capacity at an early date. Therefore, information by the IEA tends to highlight the risk of future tight market rather than forecasting a loose market condition.

In recent years, however, although messages from the IEA are primarily intended to be for oil producing countries, they are received by another type of market players whom the IEA does not assume, financial players. Because they are not generally conversant with oil business, they are making their market transactions based on the “beauty contest theory,” named by John Maynard Keynes.¹⁰ Under this theory information and “shared views” in the market, rather than market fundamentals, have a greater importance in price formation. Because these players are influential, if they interpret the market condition will continue to become tighter and consider such views as shared in the market, and their buying activities will inevitably put upward pressures on the market. The role of information provided to the market has come to have more importance in price formation. It is, therefore, necessary to provide information not only about demand increase but also about the potential of increase on the supply side as the way of delivering messages to the market.

With regard to the balanced flow of information, while demand increase is expected mainly in emerging countries in the future, there is growing expectation of the emergence of new sources of supply. For example, Table 3-2 is a sum-up of the results of two biddings for Iraqi oil field developments in 2009. The total of production capacity enhanced through these developments is close to 10 million B/D. All of these oil fields have already been discovered and thus are free from exploration risks. In this sense, if conditions allow, development of these projects will surely be realized. Iraqi oil production capacity is currently at around 2.5 million B/D; and if all development cases progress as planned, the production capacity will be enhanced up to nearly five-fold the current production capacity.

¹⁰ This explains, using a beauty contest as an example, that, in making stock investments, it is better to make investments in reference to the level of stock price which the majority of investors consider fair than to make investments after analyzing the fair price of stock subject to investments on one's own. That is, one newspaper carries out a project in which it has its readers participate in a popularity vote on the photographs of 100 women to select the six most beautiful women, and the readers who have supported those six women are given premiums by lot. In this case, readers who throw a vote (=investors) will vote for a woman (=stock) for whom the majority of readers will vote instead of for a woman whom he/she thinks is beautiful.

Table 3-2 Major Development Projects of New Oil Fields in Iraq

Name of oil field	Current production ('000 B/D)	Additional production ('000 B/D)	Companies developing oil fields
Rumaila	1,050	1,800	BP-CNPC
Zubair	195	930	Eni-Occidental-Kogas
West-Qurna 1	260	1,840	Exxon Mobil-Shell
Garraf	-	260	Petronas-JAPEX
Qaiyarah	-	120	Sonangol
West-Qurna 2	-	1,800	Lukoil-Statoil
Majnoon	45.9	1,754	Shell-Petronas
Halfaya	3.1	532	CNPC-Petronas-Total
Badra	-	170	Gazprom-Kogas-Petronas-TPAO
Najmah	-	110	Sonangol
Total		9,316	

In fact, it will take some time before the production capacity is expanded through this series of development projects, and thus the expansions will not be immediately reflected in the market balance. Moreover, in pursuing such development works, a number of issues such as security instability or legal uncertainties have to be addressed. In addition, even if actual development work is completed, OPEC may impose a constraint by setting an output quota. Yet it is of great significance that such information on the possibility of potential new supply is widely shared among market participants.

On the demand side, there is a view that oil demand will reach a peak and be reduced in the future particularly in the United States, following Japan and Europe. The current U.S. Obama administration is providing vigorous support for the development of technology for next-generation vehicles such as electric vehicles (EV) or plug-in hybrid vehicles (PHV). These vehicles use electricity for their fuel, and thus oil demand be largely affected if such “electrification” process is accelerated in the transportation sector¹¹.

Regarding developing countries, in China, for example, where, even if motorization makes progress in the future, oil demand will not grow at the same pace as that in other countries in the past. This is because energy-saving is attracting a lot of interest of the government against the backdrop of growing domestic energy demand and because introduction of electric vehicles is now making progress at the initiative of local governments. The Chinese government recognizes manufacturing of next generation vehicles as one of the most prioritized industries for its industrial policies. In particular, electric vehicles have sufficient potential for expanding their share in developing countries as their technical hurdle is lower compared to that of past internal combustion vehicles. Therefore, it is necessary to pay close attention to their introduction in the future.

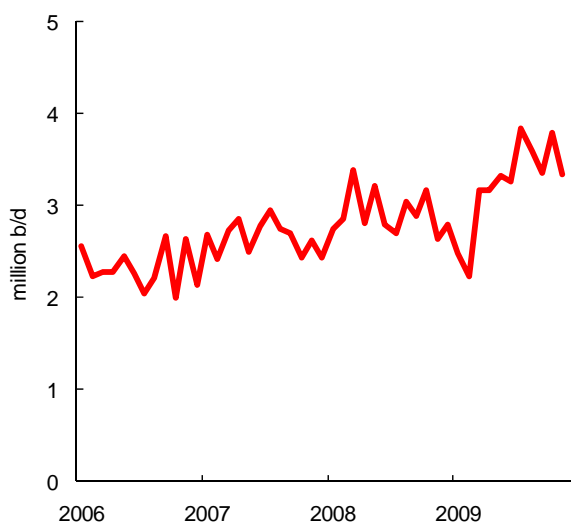
¹¹ Bassam Fattouh, “The Price Band and Oil Price Dynamics,” *Oxford Energy Comment* (July 2009).

A sharp increase in crude oil price from 2007 onwards has been coming on where buying prevails in the market due to the sharing of a fixed idea that oil supply and demand conditions will become tighter in the future among market participants irrespective of supply-demand fundamentals. In that situation, particularly, crude oil has been dealt with, in part, on the premise that the feedback effect brought to supply-demand balance does not sufficiently function; for example, a price increase brings about demand restraint and increase in investment for enhancing supply capacity. However, if such loosening factors in the market are sufficiently shared among market participants, there will be stronger recognition of the feedback effect of price among market participants than ever before if price increase continues. Consequently, it is expected that more transactions will be conducted in line with supply-demand fundamentals.

3-1-2 Development of Statistics

Development of statistical data is also a measure for provision of information to the market. It is emerging developing countries, such as China and India, that will lead the increase in oil demand in the future. However, these countries have not necessarily developed sufficient statistics on oil demand. For example, China’s oil consumption is now estimated as an “apparent demand,” which adds refinery run and net product imports. With regard to private stock possessed by oil companies and crude oil volume stored at strategic reserves bases is unrevealed.

Fig. 3-1 Historical Oil Import by China



Source : China OGP; IEEJ

For example, Fig. 3-1 shows the status of net import of crude oil in China from January 2006. Although oil import to China shows signs of increase in the latter half of 2009, it is unknown whether this is due to net demand increase or includes the amount accumulated by China as strategic stockpiling during this period. As the trend of oil consumption within China is “black-boxed,” speculations are easily formed with regard to the trend of oil consumption. It is

important in terms of price formation that accurate information is provided on a timely basis. In this regard, information on supply-demand trends of China and other Asian countries, which are expected to further increase their market share in the future, is highly important. There is concern that a lack of accurate information on this point will induce lopsided transactions based on speculations and lead to destabilization of price.

In order to avoid price fluctuations based on speculations, it is of significant importance to promote the development of statistics on oil consumption in emerging developing countries. Realistically, it is difficult even in developed countries to develop accurate and timely statistics. However, if information on whether an increase in crude oil import in emerging developing countries is truly due to consumption increase or is due to an accumulation of stock, is disclosed in an objective form, the possibility of price fluctuations based on speculations will be avoided. For development of such statistics, efforts such as the Joint Oil Data Initiative (JODI) have already been promoted. However, it is also necessary for Japan to provide active support for such efforts.

3-1-3 Continuation of Dialogue between Oil Producing and Consuming Countries

As one of the efforts to stabilize price, it is also important to further deepen dialogue between oil producing and consuming countries. Dialogue between oil producing and consuming countries started with the establishment of the International Energy Forum at the suggestion of France and Venezuela in 1991. Thereafter, exchange of information and opinions concerning energy policy and market has been carried out at the ministerial level among major oil producing and consuming countries. In addition to the International Energy Forum, a conference for dialogue between oil producing and consuming countries in Asia, including the Middle East, was held in 2005 at the initiative of Mr. Mani-Shankar Aiyar, the then Minister of Petroleum and Natural Gas of India. In April 2009, a succeeding meeting of this framework was also held in Tokyo. Moreover, in June 2008, a Summit-level meeting for dialogue between oil producing and consuming countries was held in Jeddah, Saudi Arabia, on the suggestion of King Abdullah of Saudi Arabia who felt uneasy about a negative impact brought by a rise of crude oil price at the time.

There has been no actual case in which such dialogue between oil producing and consuming countries in the past brought about an immediate and direct effect of stabilizing crude oil price. However, such dialogue is important in the sense of overcoming unnecessary distrust through mutual exchange of information and promotion of communication, to share opportunities in which oil producing and consuming countries can directly exchange their opinions on crude oil price. In addition, in a meeting between oil producing and consuming countries held in April 2009 in Tokyo, oil producing and consuming countries agreed to bring along related data and conduct analysis on future oil supply and demand, and preparatory work is now in progress. The IEA conducts supply and demand analysis for consuming countries in its own way, and OPEC does so for oil producing countries. Conducting supply and demand analysis with both organizations bringing along necessary data has the following advantage: on the supply side, it will become possible to collect accurate data and have more accurate forecast concerning future demand trends in consuming countries, and it will be easier to promote investment consistent with the pace of demand increase

in the future. Continuation of such dialogue between oil producing and consuming countries and promotion of sharing of information comprises one of the measures contributing to long-term stabilization of price.

3-2 Increase of Flexibility in Terms of Supply and Demand

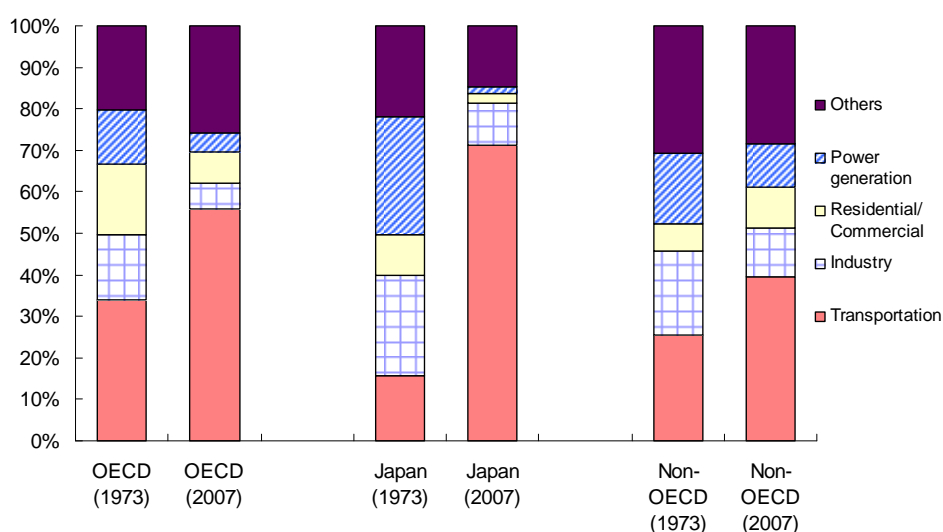
From the perspective of avoiding excessive increase and decline in crude oil price, it is also important to have the means for taking flexible action according to the supply and demand balance at the time for both supply and demand sides.

3-2-1 Promotion of Alternative Energy Sources in Consuming Countries

Increasing substitutability in oil consumption is a measure that consuming countries can take from the perspective of flexibility in supply and demand. For example, where substitutability of oil is low in the scene of final energy use, it is necessary to continue to purchase oil irrespective of the price level of oil; therefore, the price will continue to further increase. If substitutability between oil and other energy sources is increased in the final consumption sector, that is expected to have the effect of restraining oil price increase through shifting of the energy source used from oil to other energy sources when crude oil price increases.

Fig. 3-2 shows the oil demand by sector in OECD countries, non-OECD countries and Japan in 1973 and 2007. According to the figure, in OECD countries and, particularly, in Japan, the rate of use of oil for power generation, which is relatively easy to substitute with other fuels, declined, and the rate of use for demand for transportation, which is more difficult to substitute, rose. Just looking at this change in the rate, substitutability and flexibility on the consuming countries' side has decreased.

Fig. 3-2 Structure of Use of Oil in OECD Countries, Non-OECD Countries and Japan



Source : IEA, Energy Balances of OECD countries, 2009 edition; IEEJ

However, there is a circumstance that, as mentioned earlier, against the backdrop of the recent rise in oil price and growing interest in the global warming issue, development and introduction of next generation vehicles such as plug-in hybrid vehicles (PHV) and electric vehicles (EV) have recently been accelerating in major countries around the world. Given its lower technological hurdle, EV may become rapidly widespread in emerging countries where automobile sales are expected to increase in the future. Moreover, with regard to biofuel, which countries around the world are introducing, if development and introduction of the second-generation biofuel that does not conflict with food supply progress, the possibility of oil substitution in the transportation sector will be enhanced to a great extent. If a situation where oil is easily replaced with electric power is developed, or if bio fuels become more economically competitive and more compatible with food supply, it will greatly contribute to the stabilization of oil price as it becomes possible to substitute oil according to the price fluctuation. Needless to say, it takes time to realize such situation. However, as developed world could lessen its dependence on oil to a significant extent after the oil crises in the 1970s, it is of considerably great significance to start various efforts from a long-term perspective.

3-2-2 Development of Oil Stockpiling in Emerging Countries

IEA member countries have the established system to advance stockpiled crude oil at the time of urgent disruption of oil supply. On the contrary, however, it is hard to say that oil stockpiling has been sufficiently established in emerging countries for which oil demand is expected to grow without fail in the future. Therefore, it is important to develop oil stockpiling in emerging countries, in the sense of avoiding a rise in price incidental to panic actions at the time of occurrence of an accidental disruption of supply.

Since development of oil stockpiling requires a huge amount of money, including expenses for building stockpiling bases and for purchasing crude oil and expenses for operating those bases, many developing countries have difficulty in actually developing it while recognizing its importance. However, as described above, it is highly important, in the sense of preventing panic actions at the time of occurrence of an urgent disruption of supply, to promote development of the oil stockpiling system while paying sufficient attention so as not to put unnecessary buildup pressure on the market. Moreover, it will be possible to further increase flexibility on the demand side if the IEA could develop an international cooperation and collaboration system for stockpiling, similar to the system established among developed countries, in addition to development of such stockpiling.

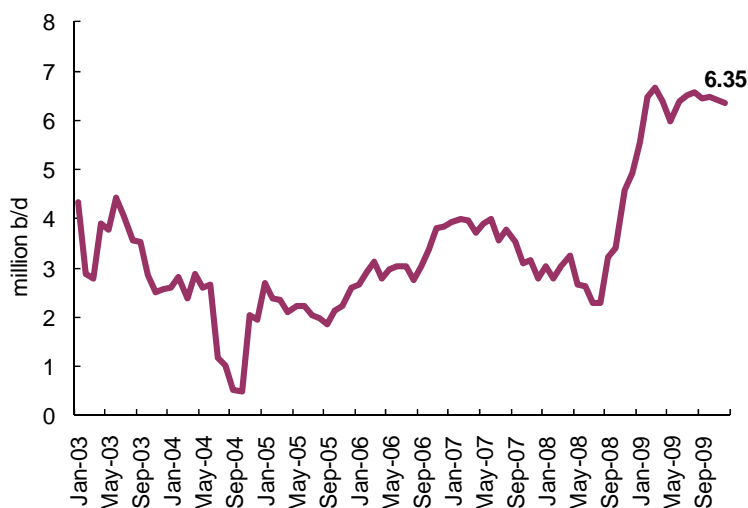
Preparation of a roadmap toward building a stockpiling system in Southeast Asian countries is now in progress within the framework of ASEAN +3 at the initiative of the Japan Oil, Gas and Metals National Corporation (JOGMEC) of Japan. Such support for development of a stockpiling system in developing countries will eventually lead to stabilization of the Asian oil market, and will contribute to ensuring stable oil supply of Japan. Therefore, support for building a stockpiling system in developing countries have a high significance as an effort toward stabilization of crude oil price in the future.

3-2-3 Maintenance of OPEC’s Spare Production Capacity

Together with building of a stockpiling system on the consuming countries’ side, establishment of a supply-demand buffer on the oil producing countries’ side is also a very important measure toward stabilization of crude oil price. In this regard, it is important that OPEC establishes sufficient spare production capacity and also utilizes the capacity toward stabilization of price.

Due to the impact of the financial crisis from the fall of 2008 and the sluggish growth of oil demand in the world, OPEC’s spare production capacity reached 6.35 million B/D as of December 2009 (Fig. 3-3). This level is of sufficient scale to endure even if the entire export of oil from Iran and Iraq stops. Therefore, adequate spare production capacity has been sufficiently ensured at least for the immediate future.

Fig. 3-3 Transition in OPEC’s Spare Production Capacity



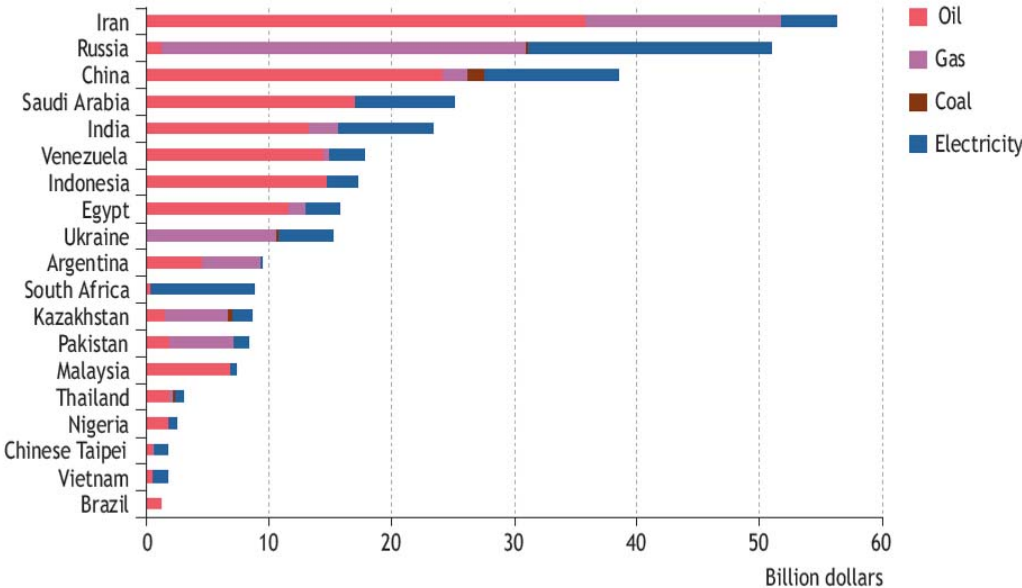
Source : IEA, Oil Market Report, edition of each month; IEEJ

However, the current high spare production capacity is due to the production cut by OPEC due to the decrease in demand, and the spare production capacity will diminish again along with future rebound in demand. Production decline in matured oil fields in OPEC countries may also be partially offset with its production capacity expansion and thus reduce its spare capacity. In addition, there is uncertainty in the trend of world oil demand in the future, and in the long run, there is an undeniable scenario where supply and demand conditions rapidly tighten due to the impact of the recent delay in investment on the supply side and sharp demand increase. Therefore, it is necessary to make an appeal to oil producing countries for timely and appropriate investment. In doing so, it will continue to be important to urge oil producing countries to make investments to ensure and maintain sufficient production capacity by persuading them that destabilization of crude oil price will have a negative impact on the global economy, and eventually on the economy of oil producing countries, and by advocating that appropriate investments will be advantageous to oil producing countries.

3-2-4 Abolishment of Subsidies in Emerging Countries

One of the factors that brought about the current destabilization of price in the crude oil market is the point that it has become difficult for the feedback function brought by crude oil price of supply and demand to have effect. One of the causes is that, in developing countries where demand is expected to expand in the future, the retail prices of oil products are controlled by the government and an increasing in international market price does not have an impact on the consumption behavior of end users. Fig. 3-4 below shows the amount of subsidies for energy prices in developing countries. For example, subsidies of 35 billion dollars in Iran, for which the amount of subsidies for oil is the largest, and those of 25 billion dollars in China, are contributed in the form of bearing difference between the controlled price and the price based on the conditions of the international market.

Fig. 3-4 Amount of Subsidies for Energy in Major Developing Countries



Source : IEA, *World Energy Outlook 2008*; IEEJ

Although a shift to a price system reflecting the market conditions has gradually been sought in the emerging oil markets, such as the Chinese, Indian and Indonesian markets, most countries are still considered to require time before the full liberalization of the oil market.

Such controlled price system is developed by oil producing countries as part of a policy to distribute export earnings from oil within the country and by other developing countries as part of a policy of protecting lower-income households. It is thus often very difficult to reform the system from a political perspective. In addition, from the developing countries’ standpoint, they implement the system within the framework of their own finance; therefore, they tend to be unwelcomed against criticisms from foreign countries as interference in domestic affairs.

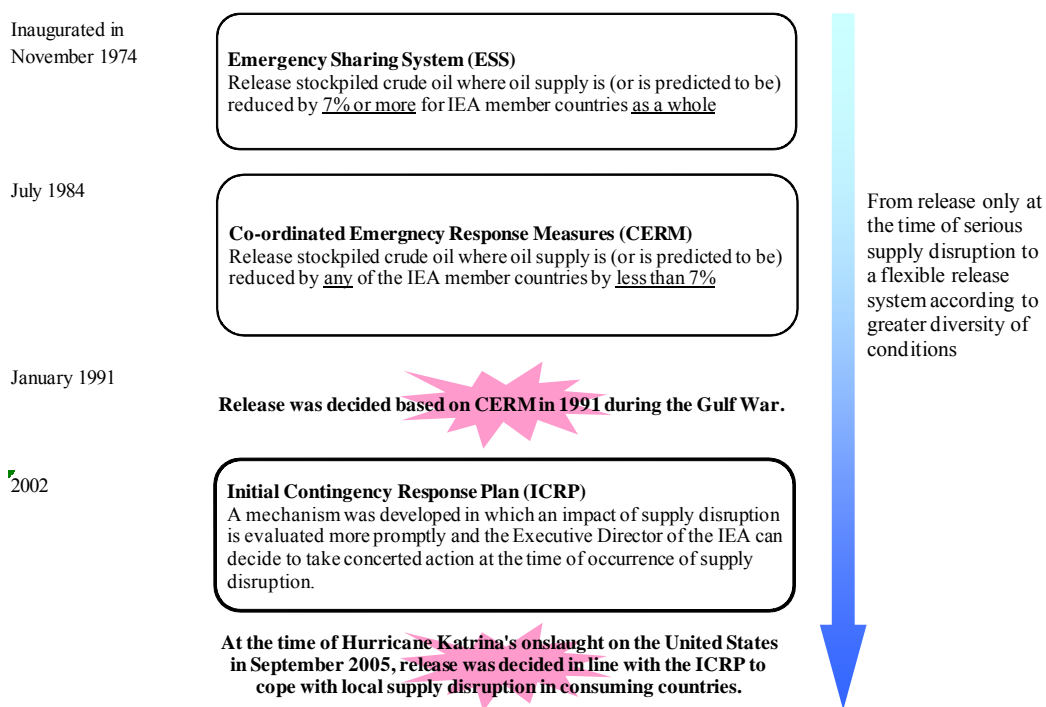
However, taking into account that it is a prerequisite for stabilization of crude oil price that the signal of fair price functions and that future increase in oil demand will occur not in developed

countries where the oil market has already been liberalized but in developing countries, it will eventually be beneficial to developing countries through stabilization of crude oil price to gradually abolish such domestic controlled price system and progressively promote the liberalization of the oil market. Therefore, it is important, toward stabilization of the future oil market, to provide emerging countries with support for efforts to correct the system with patience and incorporate those countries into the international oil market in an orderly fashion.

3-2-5 Review of Rules for Operating Stockpiling

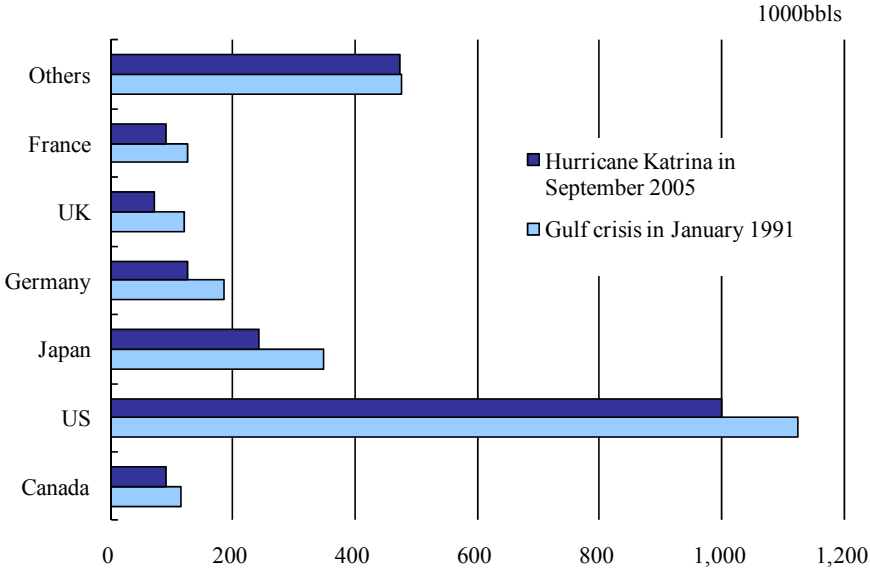
With regard to oil stockpiling, it is worth consideration to flexibly utilize crude oil that has already been stockpiled until now for stabilizing price, in addition to the development of oil stockpiling in developing countries. The current IEA member countries are obliged to build 90 day's oil stockpiling. The IEA's system for operating crude oil stockpiling has been reformed from the Emergency Sharing System (ESS), which was set at the time of inauguration in 1974, to more flexible systems, specifically, to a system called Coordinated Emergency Response Measures (CERM) and to the Initial Contingency Response Plan (ICRP), which was developed in 2002 as a developed version of CERM. When Hurricane Katrina and Lita hit the United States and caused serious damage to oil production facilities in 2005, release of crude oil stockpiled by the IEA member countries was promptly decided as an emergency measure, based on the procedure under the ICRP (Fig. 3-5 and Fig. 3-6).

Fig. 3-5 Changes in the Basic Policy for the Operation of Stockpiled Crude Oil by the IEA



Source : IEEJ

Fig. 3-6 Amount of Oil Stockpiled Crude Oil Released by the IEA during the Gulf War and at the Time of the Hurricane’s Onslaught on the United States



Source : IEA’s website; IEEJ

The relationship between oil market and stockpiling may be argued that the existence of such a large volume of oil in IEA countries’ stockpiling bases is omitted from market participants’ recognition. Market participants may even regard that the stockpiled oil will not ever be released. Even if the political situations of Iran and Nigeria are destabilized and the entire export from these oil producing countries stops, it is highly unlikely that such suspension of export will immediately bring about physical supply disruption in consuming countries as there is sufficient stockpiling. In the current international oil market, however, there are scenes where price increases due to market participants’ hypersensitive reaction to geopolitical risks. This may be because oil stockpiling is not subsistent in market participants’ perceptions. It is therefore one of the possible measures toward market stabilization to develop a system to hold consultations within the framework of the IEA and release stockpiled crude oil in a concerted manner where crude oil price sharply increased in a manner away from supply-demand fundamentals.

There may be some opposition to release of stockpiling for such a purpose. There is an opinion that oil stockpiling was originally developed as a measure to cope with an accidental supply disruption, and is originally not intended to be used for controlling price fluctuations. Countries that emphasize the utility of the market mechanism would express negative views about such measures that intervene in the market. Moreover, past intervention in other markets, such as the foreign exchange market, has not necessarily succeeded. Therefore, even if price restraint by the operation of stockpiling is carried out, there will be the risk of failure.

However, showing market participants such stance to flexibly operate stockpiled crude oil is expected to have the effect of preparing the basis for price formation reflecting actual supply and demand conditions more by increasing market participants’ recognition of stockpiled crude oil and

by easing psychological concerns about supply disruption that are likely to be shared at the time of price increase. From this perspective, it is by no means of small significance to use stockpiled crude oil more flexibly.

3-3 Measures Concerning Desirable Market

The market function plays the most important role in deciding the price of certain goods. Therefore, in considering a desirable market, systems and designs necessary to fully utilize the market function should be sought instead of unnecessarily depending on regulations and intervention. Measures as follows are possible from this perspective.

3-3-1 Ensuring of Diversity of Market Participants

Getting back to the basic principle that price is decided through negotiations between buyer and seller in the market, it is possible to ensure stabilization of the oil market through ensuring sufficient liquidity in the market and diversity of players.

Players in the current crude oil futures market can be divided into (1) commercial players who participate in the market for the purpose of hedging the risk of price fluctuation in spot trading, (2) trade/speculative players who aim to ensure profits from price fluctuations, and (3) investment players who participate in the market from the perspective of the entire investment portfolio in addition to for ensuring profits. These players are engaged in crude oil transactions with different purposes, and it is necessary for liquidity of the market and stabilization of price that these players are engaged in transactions in the market in a balanced manner, avoiding a specific type of player from having a strong influence.

Measures based on this perspective are now being promoted. The Commodity Futures Trading Commission (CFTC), which is the regulatory authority having jurisdiction over NYMEX, has been carrying out discussions on regulations from 2009, and it made public proposed regulations on position targeting four items, specifically, crude oil, natural gas, gasoline, and heating oil, on January 15, 2010.¹² Although, in the content of this regulation, the upper limit is looser than initially expected and thus the regulations may have only a limited effect, it is still a significant step forward by showing that the regulatory authority monitors, with interest, the position of such specific types of players. Ensuring the diversity and balance of players in the market is also considered to be a measure that leads to ensuring stabilization of price.

3-3-2 Increase in the Transparency of the OTC Market Transactions

It is also an important measure for stabilization of price to increase the transparency of transactions in the crude oil futures market. There are two forms of crude oil futures transactions, that is, futures transactions in the publicly-run futures market like NYMEX and transactions made bilaterally outside the publicly-run market called OTC (Over the Counter). Of these, toward increasing the transparency of transactions at NYMEX, market participants have been classified in

¹² For details, see CFTC's website (<http://www.cftc.gov/newsroom/cftcevents/2010/oeaevent011410.html>).

a form that better matches the actual condition, and their trading positions have been released to the public from September 2009 onwards.¹³

Although the size of transactions in the OTC market is unclear, it is believed to be much larger than that of the publicly-run futures market. Therefore, increase in the transparency of transactions in the OTC market is a higher priority task from the perspective of increasing the market transparency. There are now ongoing efforts in this regard by making it obligatory to make settlement through NYMEX. This kind of regulation is deemed as “neutral” in the market transaction and less likely to deteriorate the liquidity of market transactions compared to more straight forward intervention such as position limits. Such efforts to further increase transparency therefore should be promoted in the future.

3-3-3 Increase in Spot Transactions

It is also important, in the sense of restraining price decision that is away from supply-demand fundamentals, to set in place a decision of crude oil price that further reflects spot supply and demand, by activating spot transactions in Middle Eastern oil producing countries. Pricing of Middle Eastern crude oil, on which Japan now depends by 90%, is as shown in Table 3-3.

Table 3-3 Method of Deciding the Price of Middle Eastern Crude Oil

	Saudi Arabia / Kuwait / Iran	Oman	Abu Dhabi
Benchmark crude oil	Platts Oman/Dubai	DME Oman (Decided in advance)	None Absolute value (decided afterward)
Price differential of crude oil quality	Decided in advance	—	Decided retroactively
Spot transactions	None (Resale is prohibited)	DME/face-to-face (Resale is permitted)	OSP+/- α (Resale of the foreign companies' equity portion is permitted.)

Source : Based on the content published at the Crude Oil price Review Committee, which was held for this study.

The Middle East now supplies crude oil to all major oil markets, such as the North American, European and Asian markets, and is expected to play a larger role in future oil supply globally. However, Middle Eastern oil producing countries, which boast the world's leading export amount, such as Saudi Arabia and Iran, now prohibit resale of their crude oil; therefore, spot transactions are

¹³ CFTC's statistics distinguished market participants only into persons related to oil business and persons not related to oil business in the past. However, from September 2009 onwards, the statistics have been published based on four classifications, specifically, hedgers (transactions by those actually dealing with crude oil such as crude oil producers and oil refiners), swap dealers (swap transactions by investment banks, etc. for the purpose of risk hedge, arbitrage transactions, etc.), asset management business operators (futures transactions by commodity traders of hedge funds, etc. on behalf of customers, investment funds, etc.), and others (small-size and large-size transactions that do not fall under any of the above).

not conducted. Consequently, there is the situation where the supply-demand environment surrounding transactions by those countries is not sufficiently reflected in the sales price despite the very large size of the transactions from a quantitative standpoint.

In contrast, if a large amount of oil exported from these countries is traded on a spot basis, such transactions are expected to have a great impact on the price of oil exported from other oil producing countries in the world, taking the size of the transactions into account. Middle Eastern oil producing countries are not willing to realize spot transactions at this stage. Yet, adoption of more spot sales by these producers will certainly enhance the market transparency and create a strong and fair price signal that reflects physical supply-demand balance.

3-4 Time Axis for Development of Measures

Possible measures for stabilization of crude oil price were mentioned above. They are divided into (1) short-term measures which are considered to be relatively easy to implement or which have already been started and (2) long-term measures which are important and essential but still require time for their realization. Table 3-1 is reorganized as below from this perspective. Provision of information measures are expected to have more a shorter –term effect while measures for desirable market needs a longer time horizon.

Table 3-4 Short-term/Long-term Measures toward Stabilization

	Provision of information to market participants	Increase of flexibility in terms of supply and demand	Measures concerning desirable market
Short-term measures	Balanced provision of information Development of statistics Continuation of dialogue between oil producing and consuming countries	Establishment of oil stockpiling in emerging countries and development of operation system therefor Maintenance of spare production capacity Review of operation of stockpiling	Ensuring of diversity of market participants
Long-term measures		Increase of flexibility on the consuming countries' side Abolishment of subsidies in emerging countries	Increase in transparency of market transactions Increase of spot transactions

Oil market stabilization has been always a major issue for both oil producing and consuming countries. Its realization, however, is never an easy task. There is no silver bullet measure to achieve the goal; all of the above measures will have to be undertaken. What Japan can do by itself is naturally limited in this regard, and thus it should further enhance its international cooperation with both oil producing and consuming countries.

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