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Effect of Crude Oil Price Drop on the Global Energy

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3-1. Effect of Crude Oil Price Drop on the Global Energy Market

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Background and outline of the study

Background

- Crude oil prices declined sharply in mid-2014. Market fundamentals and psychology both played a role.

Outline

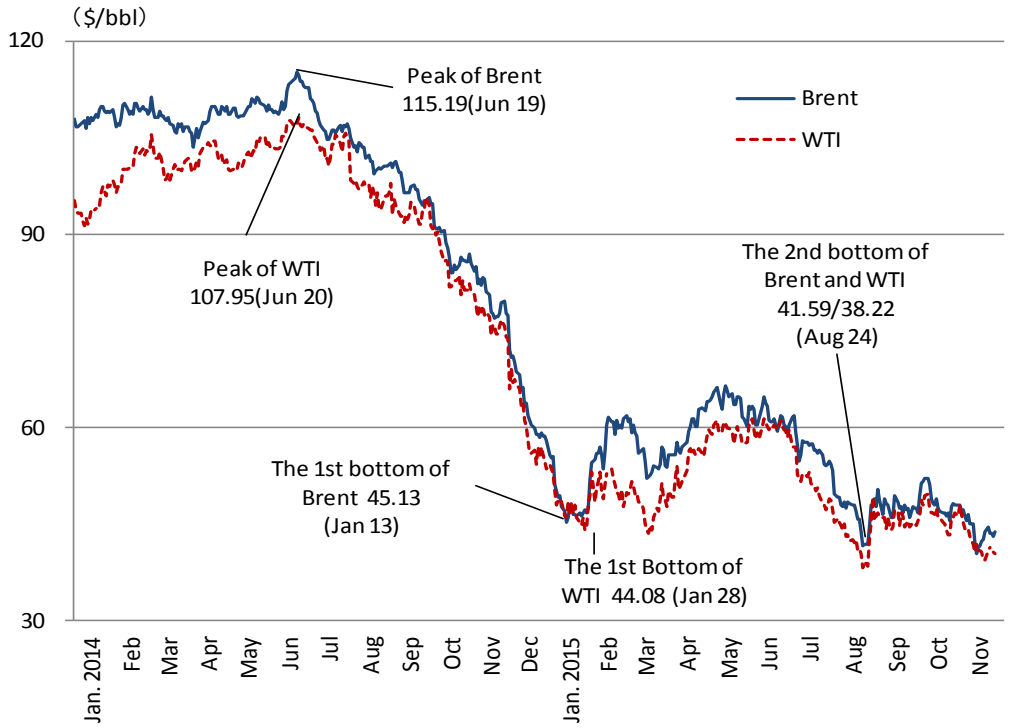
Effect on:

- The global economy
- Oil producing countries
- Major oil companies
- The natural gas market
- Other energy sectors
- Conclusions
- Policy implications for APEC economies

Why has crude oil price dropped?

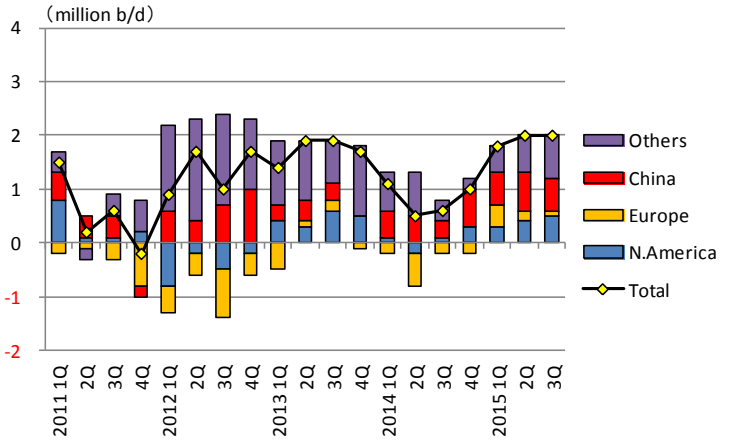
- Weaker supply-demand fundamentals
  - ✓ Slower demand increase after 3Q 2013
  - ✓ Faster supply increase after 2Q 2013
- Bearish sentiment among the market players

Changes of Crude Oil Prices

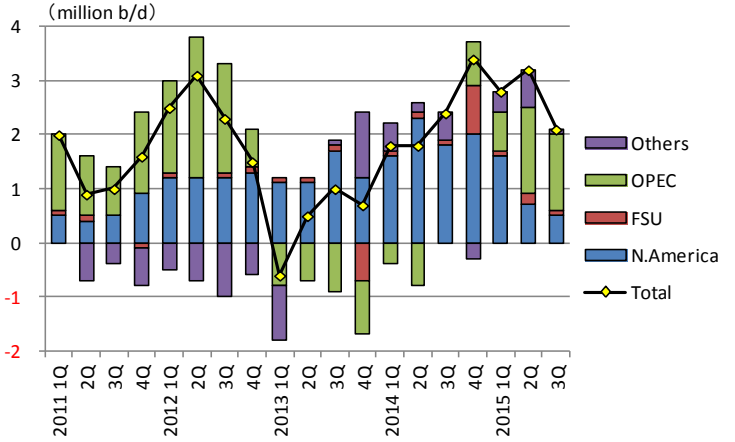


Source : EIA, Spot prices for crude oil

Quarterly Change in Oil Demand



Quarterly Change in Oil Supply



Source : IEA, Oil Market Report, Table-1

Strategic and structural change on supply side

"Even if non-OPEC countries reduced oil production, Saudi Arabia **would not reduce** oil production in order to maintain the country's share."
(Dec. 22, 2014/Saudi)

"If a sanction to Iran due to the doubt about nuclear weapon is lifted, there will be **no change in the plan to increase oil production** and promote exports even if the crude oil price will drop to $30/bbl. " (Nov. 17, 2015/Iran)

"American shale oil is now playing the role of production adjustment on behalf of OPEC. If the crude oil price goes up, **production of shale oil will rapidly increase**."
(Feb. 11, 2015/IEA)

Many elements support oversupplied condition.

- Weaker demand growth.
- Stronger supply, and major suppliers seemed to accept oversupplied condition.

Major international organizations (IEA, EIA, OPEC, World Bank, IMF) revised down their crude oil price forecasts.
"Lower price may be prolonged"

($/bbl)	World Oil Outlook 2014		World Oil Outlook 2015	
	Nominal	Real(2013)	Nominal	Real(2014)
2015	110.0	105.7	55.0	
2020	110.0	95.4	80.0	70.7
2030	139.6	98.5	123.0	
2040	177.4	101.6	160.0	95.0

Projection of OPEC Basket Price

Source : OPEC, World Oil Outlook 2015

1. Global economy (mainly OECD)

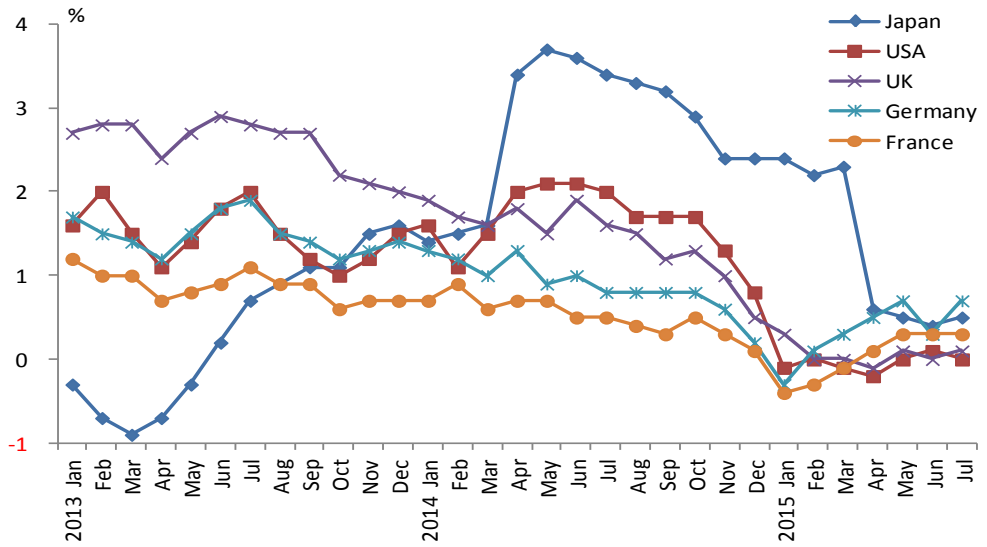
World Economic Growth Rate

	2013	2014	2015	2016
WEO in Oct. 2014	3.3%	3.3%	3.8%	4.0%
Revise in Jan. 2015		3.1%	3.5%	3.7%
WEO in April 2015			3.5%	3.8%
Revise in July 2015			3.3%	3.8%
WEO in Oct. 2015			3.1%	3.6%

Source : IMF, World Economic Outlook 2014, 2015

- Declining crude oil prices not only squeezed oil-producing economies, but adversely affected economies that both consume and produce oil.

Monthly Change Rates of CPI in Major Advanced Economies



- Consumer price indexes in major advanced economies declined in the middle of 2014, as crude oil prices dropped.

Source : Ministry of International Affairs and Communications, Japan, Change Rates of CPI in Major Countries

2. Oil producing countries (1)

Review of Economic Growth Outlook in Major Oil-Producing Countries

	WEO 10/2014		Review 1/2015		Change	
	2015	2016	2015	2016	2015	2016
Saudi Arabia	4.4%	4.4%	2.8%	2.7%	-1.6%	-1.7%
UAE	4.5%	4.4%	3.6%	3.6%	-0.9%	-0.8%
Iran	2.2%	2.2%	0.6%	1.3%	-1.6%	-0.9%
Nigeria	7.3%	7.2%	4.8%	5.2%	-2.5%	-2.0%
Russia	0.5%	1.5%	-3.0%	-1.0%	-3.5%	-2.5%

Source : IMF, World Economic Outlook 10/2014, review 1/2015

- Economic growth outlook in major oil-producing countries deteriorated because of reduced export revenue.

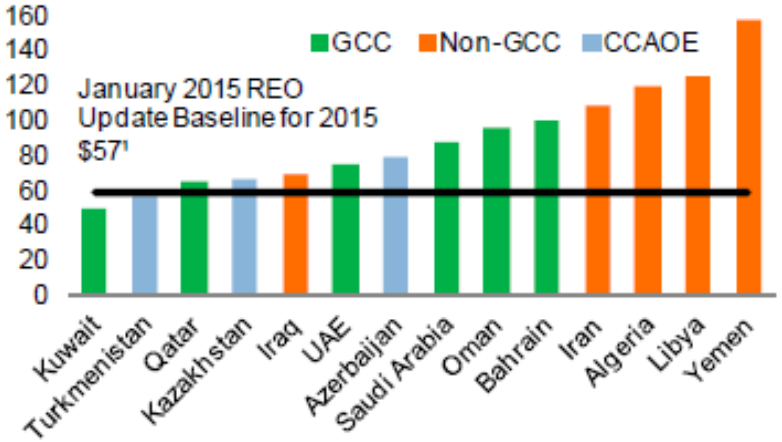
OPEC Revenue from Net Oil Exports (excluding Iran)

Source : EIA, Short-Term Energy Outlook, December 17, 2014

- Oil export revenues were estimated to decline from $821 billion in 2013 to $446 billion in 2015, assuming Brent crude oil price dropped from $109/bbl in 2013 to $68/bbl in 2015.

2. Oil producing countries (2)

Oil-Producing Countries' Financial Equilibrium Crude Oil Price



Source : IMF, Regional Economic Outlook Update, Jan. 21, 2015

- Kuwait is the only country that can balance its budget at a crude oil price of $57/bbl.

Fiscal Balance / Current Balance in the Middle East Countries

	Fiscal Balance (Proportion of GDP, %)			Current Balance (Proportion of GDP, %)		
	2014	2015	2016	2014	2015	2016
Saudi Arabia	1.1	-10.1	-6.3	14.1	-1.1	2.8
UAE	6.0	-3.7	-0.5	12.2	5.4	7.3
Kuwait	21.9	11.1	10.0	35.3	14.7	18.2
Qatar	9.2	-1.5	-5.3	23.0	1.0	3.6
Oman	-1.4	-16.4	-12.4	2.9	-17.6	-13.6
Bahrain	-5.4	-12.1	-11.7	6.6	0.0	0.5

Source : IMF, based on a review of WEO 1/2015

- Fiscal balance and current account balance of the oil producing countries will be worse than 2014.
- To supplement these financial deficits, countries may spend down reserve funds, or sell overseas assets.

3. Major oil companies

Oil Majors' Account Settlement in 2nd Quarter in 2015

	Profit ($mn)			Upstream ($mn)			Downstream ($mn)		
	2Q2015	2Q2014	%	2Q2015	2Q2014	%	2Q2015	2Q2014	%
ExxonMobil	4,190	8,780	-52	2,078	6,688	-69	2,752	1,552	77
Chevron	571	5,665	-90	-2,219	5,264	na	2,956	721	299
Shell	3,361	5,147	-35	774	3,820	-80	2,746	1,271	116
Total	2,797	3,024	-8	1,051	3,022	-65	1,992	675	72
BP	-6,266	3,182	na	228	4,049	-94	1,628	933	74

Source : Petroleum Argus, July 31, 2015, August 7, 2015

How did they respond to tougher business environment?

Oil producing country

- Reduce energy consumption
- Reduce costs
- Reduce subsidies

Oil Majors

- Postpone and cancel projects
- Reduce costs
- Sell assets

Shale oil producer

- Delay well completions
- Hedge prices
- Take low-interest loans

Uncertainty about investment in new production capacity to can meet future oil demand.

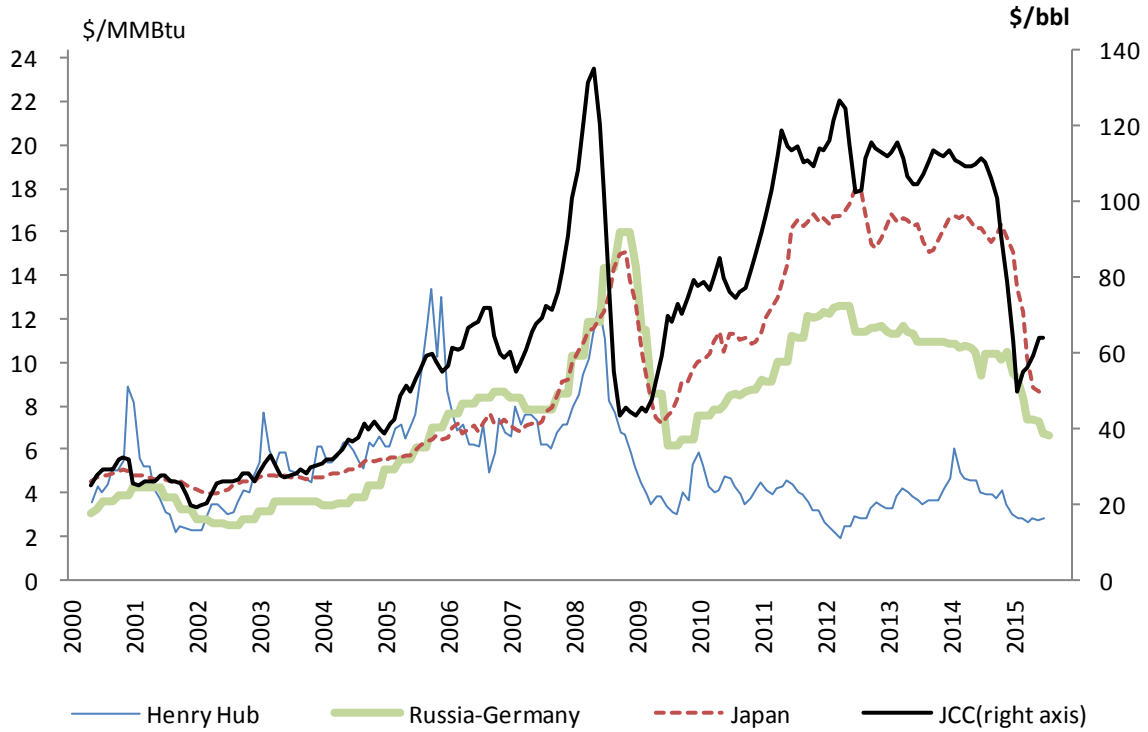
4. Natural gas market

Lower prices

- Importing countries are enjoying lower natural gas prices because of:
  - ✓ Growing unconventional gas supply in United States.
  - ✓ Price formulas that link natural gas and oil prices in Asia and Europe.

Future concerns

- Underinvestment reflecting lower gas price in:
  - ✓ Upstream sector may create tighter supply-demand market after 2020.
  - ✓ Midstream sector may create congestion of transportation capacity, and thus may possibly affect supply in the future.



Crude Oil Price and Major Natural Gas Prices

Source : Trade Statistics of Japan, EIA, Energy Intelligence

5. Other energy sectors

Coal

- The coal price is not affected by the crude oil price drop. Its change is basically dominated by its fundamentals.

Renewables

- Policy has greater effect on introduction of renewable energy than market mechanism. Therefore, it has not been affected by lower crude oil price.

Nuclear

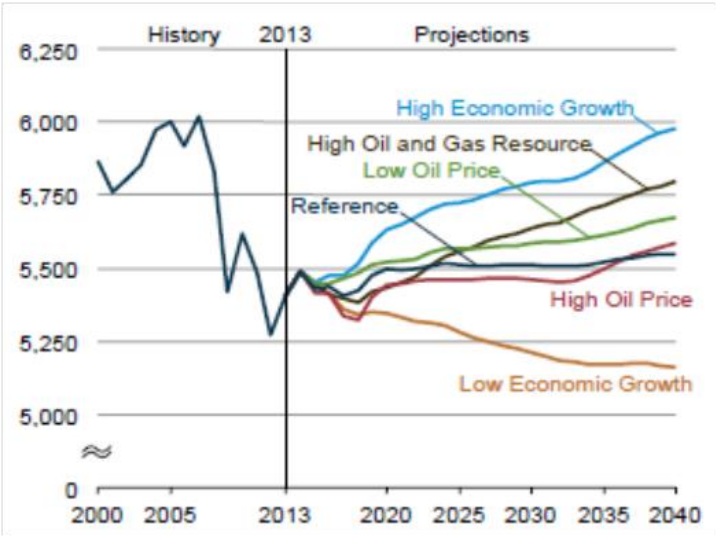
- Nuclear power and oil-fired power have a totally different role and use in electricity supply. Therefore, nuclear power has not been affected by lower crude oil price.

CO_2 emission

- Higher oil consumption driven by lower crude oil prices will push up CO_2 emissions.
- However, changes in the economic growth rate have a greater impact on the increase or decrease in CO_2 emissions than changes in the crude oil prices.

(by EIA, Annual Energy Outlook 2015).

Forecast of CO2 emissions in each case



Source : EIA, Annual Energy Outlook 2015

Conclusions

Effect on Trade Account

- Lower oil prices benefit all consumers.
- In oil exporting countries, lower oil prices result in large losses to the trade account.
- The same can be said for natural gas importing and exporting countries where the natural gas price is linked to oil price.

Effect on Energy Choice

- Electricity and renewables are not much affected.

Effect on Energy Security

- Less investment may affect mid- to long-term energy security.

Policy implications for APEC economies

Continue to strengthen efforts to diversify energy and economy

- **Crude oil importing economies should further strengthen efforts to diversify energy supply to enhance energy security.**
- **Crude oil exporting economies should further strengthen efforts to diversify their economic base.**

Adhere to policies to act against climate change

- **Lower oil prices will lead to higher demand for oil. Member economies are encouraged to continue efforts to implement climate change mitigation policies.**
- **Low oil prices are a good opportunity to remove energy price subsidies.**

Thank you for your kind attention

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