Commodity and Energy Market in Japan

Policy of Japan’s Commodity Derivatives and Efforts to Establish LNG and Electricity Futures Markets

Tatsuya Terazawa, Director-General for Commerce Distribution and Industrial Safety Policy
Ministry of Economy, Trade and Industry
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1. Japan’s Commodity Futures Market – international status

Major contracts of the **Tokyo Commodity Exchange (TOCOM)** have a considerable international presence.

### Breakdown of the volume (2014)

- **Gold** 40%
- **Rubber** 11%
- **Platinum** 21%
- **Mini-gold** 6%
- **Corn Soybean** 2%
- **Crude oil** 4%
- **Kerosene** 3%
- **Gasoline** 9%
- **Gasoline** 9%

**International rubber benchmark**

**Most liquid international gold futures in East Asia**

World gold futures volume in 2013
- CME/NYMEX: 47,294,551 lots
- TOCOM: 12,224,611 lots
- Singapore Mercantile Exchange: 305,918 lots
- Hong Kong Mercantile Exchange: 145,223 lots
- Korean Exchange (mini gold): 34,858 lots

※ The Mainland Chinese markets are mostly for domestic investors.

**World most liquid platinum futures**

World platinum futures volume 2013
- TOCOM: 4,278,478 lots
- CME/NYMEX: 3,262,77 lots

Volume data: Futures Industry Association
1. Japan’s Commodity Futures Market ① Rubber

TOCOM’s Rubber Futures – International Benchmark

- TOCOM’s Rubber is the only Asian contract included in Rogers International Index (RICI).
  - Jim Rogers established Quantum Fund with George Soros. After leaving Quantum Fund, he made up Rogers International Commodity Index (RICI).
  - RICI is well recognized worldwide as an international commodity index.

Left: Portfolio of Rogers International Commodity Index®
Comparison between Gold and other major financial instruments (Risk and Return)

- For the long term (past 10 years), although volatility of gold was higher than bonds, its return was greater than that of all other popular Japanese financial instruments.
- For the short term (one year or shorter), Yen-denominated gold achieved a high return due to yen depreciation.

<table>
<thead>
<tr>
<th></th>
<th>Annual Return</th>
<th>Annual volatility (Risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Past 1 yr</td>
<td>Past 5 yrs</td>
</tr>
<tr>
<td>Gold (JPY)</td>
<td>14.2%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Japanese bond</td>
<td>4.2%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Foreign bond</td>
<td>19.1%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Japanese equity</td>
<td>10.3%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Foreign equity</td>
<td>20.0%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Japanese REITs</td>
<td>25.3%</td>
<td>16.3%</td>
</tr>
</tbody>
</table>

Data of Dec. 2004 to Dec 2014 (daily return basis) were used for above calculation.


Source: World Gold Council, Bromberg
1. Japan’s Commodity Futures Market 🎯 Gold

**Comparison between Gold and other major financial instruments (Correlation)**

- Correlation of gold with Japanese bond and Japanese equity is lower (closer to 0) than that with other financial instruments.
- By including gold into a portfolio, total return of the portfolio is expected to be improved.

<table>
<thead>
<tr>
<th></th>
<th>Gold (JPY)</th>
<th>Japanese bond</th>
<th>Foreign bond</th>
<th>Japanese equity</th>
<th>Foreign equity</th>
<th>Japanese REITs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese bond</td>
<td>-0.03</td>
<td>1.00</td>
<td>-0.05</td>
<td>-0.37</td>
<td>-0.12</td>
<td>-0.12</td>
</tr>
<tr>
<td>Japanese equity</td>
<td>0.22</td>
<td>-0.37</td>
<td>0.36</td>
<td>1.00</td>
<td>0.35</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Data of Dec. 2004 to Dec 2014 (daily return basis) were used for above calculation.

Source: World Gold Council, Bromberg
Looking at the fluctuation of the crude oil price, individual investors have been investing in ETFs and ETNs. Open interest of commodity futures market underlying the ETFs/ETNs has been increasing.

1. Japan’s Commodity Futures Market  ❂ Crude oil

- Increase of issued ETNs
- Purchase ETNs
- Crude oil “Double Bull” ETNs (Listed on JPX)
- Increase of ETN trading volume
- Purchase futures to underline the ETNs
- Crude Oil Futures (Listed on TOCOM)
- Increase of TOCOM Volume
## Major TOCOM related ETFs • ETNs

<table>
<thead>
<tr>
<th>Issue name</th>
<th>Type</th>
<th>Description</th>
<th>Issued amount as of Mar 31, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEXT NOTES Gold “Double Bull”</td>
<td>ETN</td>
<td>Linked to TOCOM gold leverage index</td>
<td>1,539 million yen</td>
</tr>
<tr>
<td>NEXT NOTES Crude Oil “Double Bull”</td>
<td>ETN</td>
<td>Linked to TOCOM crude leverage index</td>
<td>73,381 million yen</td>
</tr>
<tr>
<td>NEXT NOTES Crude Oil “Bear”</td>
<td>ETN</td>
<td>Linked to TOCOM crude inverse index</td>
<td>1,977 million yen</td>
</tr>
<tr>
<td>Pure Gold Listed ETF</td>
<td>ETF</td>
<td>Purchase gold bars, using TOCOM gold price as a benchmark</td>
<td>38,026 million yen</td>
</tr>
<tr>
<td>Pure Platinum Listed ETF</td>
<td>ETF</td>
<td>Purchase platinum bars, using TOCOM platinum price as a benchmark</td>
<td>3,953 million yen</td>
</tr>
<tr>
<td>Pure Silver Listed ETF</td>
<td>ETF</td>
<td>Purchase silver ingots, using TOCOM silver price as a benchmark</td>
<td>4,823 million yen</td>
</tr>
</tbody>
</table>
2. Enhancement of Commodity Futures Market

**Actions made to expand participation of below categories**

**① Institutional investors and ② Commercials**
- Adding commodities into the portfolio of GPIF.
- Clarification of hedge accounting rule.

**④ Overseas investors**
- TOCOM’s FBOT registration.
- High speed network service between Tokyo and Chicago.

**③ Individual investors**
- Relaxation of solicitation rule.
- Integration of Commodity Derivatives into Calculation of financial Income Tax.

**⑤ Brokers**
- Encouragement of financial instruments business operator’s participation.
- Cost reduction by system cooperation between TOCOM and JPX.

**Establishment of futures market coordinating with Japan’s energy policy**

- **Listed commodities (Gasoline, Kerosene, Gasoil, Crude)**
- **New commodities (Electricity, LNG)**

**Comprehensive Energy Futures Market**
2. Enhancement of Commodity Futures Market

① Institutional Investors

<Adding Commodity into the portfolio of Government Pension Investment Fund (GPIF)>

- The final report published in November 2013 by the expert panel for sophisticating the management of public/quasi-public funds at the Cabinet Secretariat stated that commodities should be included in the portfolio of the GPIF.

- GPIF is the world’s largest fund of JPY 120 trillion
2. Enhancement of Commodity Futures Market

② Commercials (producers, merchants, processors and users)

<Clarification of Hedge Accounting Rule>

- Following METI and MAFF requests, the Japanese Institute of Certified Public Accountants publicized the revisions of “Practical Guideline for Accounting for Financial Instruments” and “Accounting for Financial Instruments Q&A” on April 14, 2015.

- It was clarified that;
  
  Hedge accounting is applicable for cross hedge (between different commodities e.g. crude oil and an oil product) and roll-over (change of hedging period)

- By this, derivatives trade to hedge their business operation can be conducted smoothly by commercials.
2. Enhancement of Commodity Futures Market

③ Individual investors

<Relaxation of Solicitation Rule>

METI and MAFF amended the Ministry Ordinance on January 23, 2015 to 
**deregulate the prohibition on uninvited solicitation** for below types of 
investors. (**to be effective as of June 1, 2015**)

1. Investors who have experience of high risk trading including FX, 
   derivatives trading (e.g. Nikkei 225) and margin trading

2. Investors who have no experience of such high risk trading but meet 
   several criteria, such as the amount of income and financial asset etc.

<Integration of Commodity Derivatives into Calculation of financial Income Tax>

Integration of commodity derivatives with securities etc. into profit/loss 
calculation of financial income tax is included in the agenda of FY 2015 
package of Tax Revisions for further deliberation.
2. Enhancement of Commodity Futures Market

④ Foreign investors

Percentage of overseas participation in total TOCOM volume has been increasing to 44.5% in FY 2014.

Transaction from overseas in TOCOM (FY2008-FY2014)

- Foreign Buys and Sells (lot)
- Foreign transaction (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Foreign Buys and Sells (lot)</th>
<th>Foreign Transaction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2008</td>
<td>7,947</td>
<td>9.7%</td>
</tr>
<tr>
<td>FY2009</td>
<td>6,175</td>
<td>11.0%</td>
</tr>
<tr>
<td>FY2010</td>
<td>9,530</td>
<td>17.0%</td>
</tr>
<tr>
<td>FY2011</td>
<td>15,184</td>
<td>24.6%</td>
</tr>
<tr>
<td>FY2012</td>
<td>16,090</td>
<td>30.4%</td>
</tr>
<tr>
<td>FY2013</td>
<td>18,648</td>
<td>39.0%</td>
</tr>
<tr>
<td>FY2014</td>
<td>20,186</td>
<td>44.5%</td>
</tr>
</tbody>
</table>
CFTC granted TOCOM’s application for FBOT registration as of January 21, 2015. (TOCOM is the third FBOT in the world and the first FBOT in Asia.)

Chairman Massad of CFTC announced this news by himself at the FIA Japan’s seminar in Tokyo.

By this, **US traders can connect directly to TOCOM. US traders who do not have branches etc. in Japan can be a member.** This could cause the trade to become more active.

As FBOT registration means to verify that FBOTs conform to the same level of regulatory requirements applied to US exchanges, **TOCOM’s international credibility is expected to increase.**
2. Enhancement of Commodity Futures Market

④ Overseas Investors

<Chicago-Tokyo High Speed Network Service>

- TOCOM offers high speed network service between Chicago and Tokyo Data Center.
  (Started on Sep 15, 2014 Chicago time)

- Transactions have started since February 2015.

Latency between TOCOM DC and CME Aurora DC: 122ms
The world’s fastest in this zone
2. Enhancement of Commodity Futures Market

⑤ Brokers

<Encouragement of Financial Instruments Business Operator’s Participation>

Minimize the differences in procedures etc. between Financial Instruments and Exchange Act and Commodity Derivatives Act to facilitate participation of Financial Instruments Business Operators into commodity derivatives. (July 2014)

Almost no additional cost to start commodity derivatives business
2. Enhancement of Commodity Futures Market

⑤ Brokers

<System cooperation between TOCOM and JPX>

- On December 19, 2014, TOCOM signed a contract with JPX group (Osaka Exchange Inc.) to jointly use the next generation system provided by NASDAQ OMX and have JPX IT section to provide maintenance and operation of system services to TOCOM.

- Next generation system is planned to start operation in autumn 2016.

- By this system cooperation, brokers who participate in both TOCOM and JPX are integrating their systems to offer one-stop trading interface to their customers.

- One example is that in case of a major online security firm, 1.67 million customers who have a cash management account could potentially trade commodity futures.
Establishment of LNG and Electricity Futures Market

Government policy

Development of LNG and Electricity futures market is included in the third arrow of Abenomics

Revised “Japan Revitalization Strategy” (approved by the Cabinet on June 24, 2014) (extract)

5-3. (3) “… the Government will make swift, steady progress with initiatives including … developing the market for energy futures.”

Strategic Energy Plan (approved by the Cabinet on April 11, 2014) (extract)

Chapter 3.
Section 1 “The Japanese government will proactively support … by conducting a study on a LNG futures market.”

Section 6 “… the full retail competition, full liberalization of power generation and introducing electric power in the futures market aims to create a structure to suppress electricity rates…by increasing competition in the market…”

Section 9 “In Japan as well, there are expectations that a study will be conducted on the reform of the electricity and LNG markets…so as to ensure the establishment of reliable and transparent price benchmarks that reflects energy supply and demand and that the energy futures market will be developed.”
3. Establishment of LNG and Electricity Futures Market

- Japan’s import value of LNG has been rising, as the import of the fuel for power generation has increased after the Great East Japan Earthquake.
  
  JPY 1.6 trillion (2004) → JPY 7.8 trillion (2014)

- Asia’s LNG import price is linked to the crude oil price. While natural gas price has been stable due to shale gas revolution etc., Japan’s LNG import price increased because of the increase of the oil price since mid 2000’s.

- Most recently oil price dropped but it has already started to increase. It is not rational that LNG price is set by linking to crude oil which is more volatile and different in the balance of supply and demand of LNG.

**LNG import value**

($/MMBTU)

Source: Trade statistics of Japan, Ministry of Finance, and EIA etc.

**Natural gas price Jan 2014– Mar 2015**

Source: Trade statistics of Japan, Ministry of Finance
Establishment of the LNG futures market is expected to rationalize the pricing

- Oil-linked-LNG pricing mechanism to be shifted to the pricing based on supply and demand of LNG
- LNG price to be rationalized by arbitrage with US natural gas following the import of shale gas from US

Publication of LNG spot transaction price by METI (Apr 2014)

- Establishment of the LNG futures market
- Start of OTC LNG marketplace (Sep 2014)
- Expected effect
  - Rationalization of LNG import value

Pricing of LNG based on its supply and demand

Arbitrage

US natural gas futures market

Revision of the long-term contracts
Review of destination clause
Import of shale gas etc.

Shale gas revolution

Rationalization of LNG import value
Establishment of LNG market in Japan OTC Exchange (JOE) (Sep2014)

- JOE is an OTC trading facility between commercials and with financial institutions (Facility Similar to Specified Commodity Market)
- Licensed to establish an oil product market on May 20, 2014.
- Licensed to establish an LNG market on Sep 11, 2014 participated by major electricity, gas, oil companies and trading houses.
- Members of the LNG market were 17 at the opening, and now increased to 21 companies.
- Orders were placed by Japanese trading houses at the beginning, now orders are placed by various members including energy and overseas companies.
To establish an independent LNG benchmark for Asia as the largest importing area of LNG, alongside of Europe and US, is a great advantage to Asian countries.

Expect variety of international buyers and sellers to participate in JOE so that it can become an LNG benchmark for Asia.
Reforms in three steps has been stipulated in the first bill. The third bill which includes legal unbundling of transmission sector was submitted to the Diet this year. Full retail competition is scheduled in April 2016.

3. Establishment of LNG and Electricity Futures Market ②Electricity
In Europe and US, following the full liberalization of retail business, a spot exchange was established in 1 to 2 years, a futures exchange was established in 1 to 5 years.
Electricity futures in line with Electricity System Reform

- By the introduction of electricity futures market, business entities come to be able to hedge price fluctuation of electricity. Such environment will encourage new comers to join electricity business and facilitate their smooth operation.

- Active participation to the market and business operation by power producers and retailers will lead to decrease in electricity price, which is aimed for in the reform.

- Commodity Derivatives Act was amended together with Electricity Business Act, so that electricity can be listed as a futures contract (Enacted as of June 2014)
Electricity Futures Council was established in March 2015 to consider a desirable framework of electricity futures market in Japan, by studying cases in other countries. It is planned to publish a summary report in June 2015.

**<Electricity Futures Council>**

**Main agenda**
- Market structure of wholesale electricity market and the transaction
- Case examples of hedging electricity and electricity futures markets in foreign countries
- Desirable framework of electricity futures trading in Japan (contract specification)
- Measures for preventing “money game”

**Members**
- Electricity suppliers (TEPCO, KEPCO, J-Power, Osaka Gas, Ennet, etc.)
- Electricity consumers (JX Nippon Oil & Energy Corporation, Nippon Steel & Sumitomo Metal Corporation)
- Financial Institutions (Mizuho Bank, Goldman Sachs Japan)
- Exchanges (TOCOM, JCCH, Japan Electric Power Exchange)
Establishment of energy futures market is expected so that the price hedge for fuels (LNG, coal, crude oil, oil products) in addition to electricity can be smoothly conducted.

Energy futures market

- Spark spread (spread between gas and electricity) and dark spread (spread between coal and electricity) can help power generators to fix the margin and profit.

- Electricity users, 9 Power companies, New power generators, etc.

- Hedging electricity price

- Electricity Futures

- LNG futures

- Coal futures

- Crude and oil product futures

- 9 Power companies, Gas companies, Trading companies, etc.

Hedging fuel price
4. For further participation by Financial Institutions to Commodity Market

- Ratio of commercial participation in TOCOM gold is at a level comparable to CME gold market.

- Currently, TOCOM participating financial firms are mainly overseas proprietary companies which conduct arbitration.

- More domestic funds and financial firms are expected to participate in Japanese commodity market, leveraging the liquidity provided by prop companies.

TOCOM Gold: Volume by participant types (As of Sep 2014)

- Individual Investor: 28%
- Prop, Market maker: 38%
- Other domestic: 7%
- Foreign, not classifiable: 15%
- Commercial: 12%

Source: TOCOM

CME-Group Gold (NYMEX/COMEX): Open interest by participant types (As of Sep 2014)

- Swap dealer: 30%
- Managed money: 29%
- Other reportable: 15%
- Non-reportable: 11%
- Producer, Merchant, Processor, User: 15%
- Other: 7%
- Individual Investor: 28%

Financial Institutions

Source: CFTC Commitments of Traders Report
4. For further participation by Financial Institutions to Commodity Market

- Commodities consist a part of portfolio of funds including corporate pension funds overseas.

Asset allocation of US California Public employees’ Retirement System (CalPERS)
(As of Jan 31, 2015)

<table>
<thead>
<tr>
<th>Current Allocation (%)</th>
<th>Actual Investment ($ Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>18.9%</td>
</tr>
<tr>
<td>Equity</td>
<td>62.8%</td>
</tr>
<tr>
<td>Real Assets and Infrastructure</td>
<td>10.1%</td>
</tr>
<tr>
<td>Inflation-Linked Assets (Commodities and Inflation-linked bonds)</td>
<td>5.0%</td>
</tr>
<tr>
<td>Other</td>
<td>3.2%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Percentage of asset allocation has been adjusted to maximize returns at a prudent level of risk at CalPERS. Commodities have been included in the portfolio 1) to achieve long-term returns above inflation and 2) to diversify the investment.

- Japanese commodity market can be utilized via ETFs and ETNs which underline commodities.
- Commodity investment is expected to expand in Japan as a part of the portfolio of financial institutions.