NOMURA

Global Markets Research
4 November 2020

Nomura Crude Oil Index

EQUITY: EQUITY QUANTITATIVE RESEARCH (INDEX)

Index rulebook

Research Analysts

Japan index products

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What is the Nomura Crude Oil Index?

- The Nomura Crude Oil Index is an index designed to track movements in crude oil prices.
- The index mimics the performance of investments in crude oil futures and incorporates a rollover mechanism to enable investment that tracks the index.

Main changes

- [October 2016] Change to QUICK code in “5. Index data publication services”
- [October 2020] Change to Crude Oil Long Index calculation method
- [November 2020] Change to QUICK code in “5. Index data publication services”

Contents

1. Introduction

The Nomura Crude Oil Index is an index designed to track movements in crude oil prices. The index mimics the performance of investments in crude oil futures and incorporates a rollover mechanism to enable investment that tracks the index[1] .

2. Index constituents

The index comprises NYMEX WTI Light Sweet Crude Oil futures, which are listed on the New York Mercantile Exchange (NYMEX).

Contract months of the futures contracts used to calculate the index are as follows[2] .

Date	Contract months of futures contracts used
Most recent reconstitution date (*1) ≦ calculation date ≦ reconstitution base date immediately after most recent reconstitution date (*1)	3rd, 4th, and 5th contract months
Reconstitution base date immediately after most recent reconstitution date (*1) < calculation date < next reconstitution date (*1)	2nd, 3rd, and 4th contract months

(*1) See “3. Index reconstitution” for details.

Index constituents are changed only on reconstitution dates.

1. The Nomura Crude Oil Index tracks crude oil futures prices, but diverges from the price, referred to by news outlets, that simply represents the futures price for the latest front month contract. Futures contracts have expiration dates and the price used by news outlets when they discuss market conditions is based on the futures contract with an expiration date that is closest to the current date (ie, the front month contract). When the front month contract approaches maturity, news outlets switch to reporting the price of the next futures contract, ie, the contract with an expiration date that is the next-closest to the current date. At this point, if the price of the next futures contract is higher (or lower) than the price of the expiring futures contract, the futures price that is quoted by news outlets appears to rise (or fall) sharply. Futures contracts have a time value, and generally speaking this time value is larger the further the contract is from expiry. This means that when the price switches from one contract to the next it tends to rise, rather than fall. However, investment in crude oil futures is investment in futures contracts that have expiration dates, and therefore at some point it is necessary to sell the front month contract and buy a back month contract (this process is called “rolling over”). Because, on average, the price of a contract in a further-out month tends to be higher than the price of the front month contract, the volume of contracts held will tend to decline following rollover if the size of the investment remains the same. The futures price quoted by news outlets appears to jump when the front month contract expires and is replaced by another front month contract. However, because the size of the investment remains the same, this switch in front month contracts results in a divergence between fluctuations in the futures price quoted by news outlets and fluctuations in the assets invested.
2. Effective from November 2020.

3. Index reconstitution[2]

3.1 Index reconstitution date

If the fifth business day on NYMEX after the last day of trading is a business day in Tokyo, the index reconstitution date is the fifth business day on NYMEX after the last day of trading. However, if the fifth business day on NYMEX after the last day of trading is not a business day in Tokyo, the index reconstitution date is the next day, after the fifth business day on NYMEX after the last day of trading, that is both a business day on NYMEX and a business day in Tokyo.

3.2 Index reconstitution base date

The last day of trading each month is the index reconstitution base date. The volume of the index constituent used to calculate the index, for each index constituent, is based on the value for index calculation purposes on the reconstitution base date (*2) and the price of the index constituent after the next reconstitution on the reconstitution base date. The volume of the index constituent used to calculate the index does not change up to the next reconstitution.

(*2) See “4.2 Calculation method” for value for index calculation purposes.

- A "business day in Tokyo" is defined here as a day on which commercial banks in Tokyo settle payments.
- The "next day, after the fifth business day on NYMEX, that is both a business day on NYMEX and a business day in Tokyo" is defined here as the first business day on NYMEX after the fifth business day on NYMEX that is also a business day in Tokyo.
- The "last day of trading" is defined here as the day that is three business days on NYMEX before the 25th day of each month. However, if the 25th day of the month is not a business day on NYMEX, the "last day of trading" is defined here as the day that is three business days on NYMEX before the business day on NYMEX before the 25th day of the month.

4. Nomura Crude Oil Long Index calculation method

4.1 Index base date and index base value

The index base date is 31 December 2008 and the base value for the index is 1,000.

4.2 Calculation method

Nomura Crude Oil Long Index values are calculated using the method set out below[3] .

$$\text{Index value}\ (t) = (1 + \text{return}\ (t)) \times \text{index value}\ (t-1)$$

$$\text{Return}\ (t) = \frac{\sum_{i\in\ \text{index constituent}(t)} \text{Volume used to calculate index}_i\ (T(t)) \times \text{price}_i(t)}{\sum_{i\in\ \text{index constituent}\ (t)} \text{Volume used to calculate index}_i\ (T(t)) \times \text{pricei}(t-1)} - 1$$

$$\text{Volume used to calculate index}_i\ (T(t)) = \frac{\text{value for index calculation purposes}\ (T_0(t))}{3} \div \text{price}_i\ (T_0(t)) \quad i \in \text{index constituent}\ (t)$$

$$\text{Value for index calculation purposes}\ (T_0(t)) = \sum_{i\in \text{index constituent}\ (T(t))^{(*3)}} \text{Volume used to calculate index}_i\ (T'(t)) \times \text{price}_i(T_0(t))$$

- *t* : calculation date (business day on NYMEX)
- *t-1* : business day preceding *t* on NYMEX
- *T(t)* : reconstitution date immediately preceding *t*
- *T′(t)* : reconstitution date immediately preceding *T(t)*
- $T_0(t)$: reconstitution base date immediately preceding *T(t)*
- price *i(s)* : settlement price of index constituent *i* on NYMEX at time *s* (price per barrel in USD)[4]
- index constituent (*t*): futures contracts for 3rd, 4th, and 5th contract months at time *T(t)* (*4)
- Volume used to calculate $\text{index}_i\ (T(t))$: volume of index constituent *i* used to calculate the index at time *T(t)*
- Value for index calculation purposes $(T_0(t))$: total of [volume of index constituent *i* used to calculate index at time *T′(t)*] X [price of index constituent *i* at time $T_0(t)$] for index constituent *(T(t))*

(*3) Futures contracts for 3rd, 4th, and 5th contract months at time *T′(t)*

(*4) Futures contracts for 4th, 5th, and 6th contract months at time $T_0(t)$, and 2nd, 3rd, and 4th contract months after index reconstitution base date immediately after time *T(t)*

3. Effective from 30 November 2020.
4. If for some reason the price cannot be used or if use of the price is considered to be extremely inappropriate, the price may be determined with reference to the price on the preceding business day on the exchange on which index constituent i is listed, the price of a similar commodity future, or the market traded price.

5. Index data publication services

5.1 Publication of index values

Nomura Crude Oil Long Index values are published on the following media:

Our website：http://qr.nomura.co.jp/jp/oil/index.html

Bloomberg：NMLSCOIL Index

QUICK：SOIL#L/NRIN[5]

REUTERS：.NCOILL

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5. Effective from 30 November 2020.

Appendix A-1

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When bonds are purchased via public offerings, secondary distributions, or other OTC transactions with Nomura Securities, only the purchase price shall be paid, with no sales commission charged. Bonds carry the risk of losses, as prices fluctuate in line with changes in market interest rates. Bond prices may also fall below the invested principal as a result of such factors as changes in the management and financial circumstances of the issuer, or changes in third-party valuations of the bond in question. In addition, foreign currency-denominated bonds also carry the risk of losses owing to factors such as foreign exchange rate fluctuations.
When Japanese government bonds (JGBs) for individual investors are purchased via public offerings, only the purchase price shall be paid, with no sales commission charged. As a rule, JGBs for individual investors may not be sold in the first 12 months after issuance. When JGBs for individual investors are sold before maturity, an amount calculated via the following formula will be subtracted from the par value of the bond plus accrued interest: (1) for 10-year variable rate bonds, an amount equal to the two preceding coupon payments (before tax) x 0.79685 will be used, (2) for 5-year and 3-year fixed rate bonds, an amount equal to the two preceding coupon payments (before tax) x 0.79685 will be used.
When inflation-indexed JGBs are purchased via public offerings, secondary distributions (uridashi deals), or other OTC transactions with Nomura Securities, only the purchase price shall be paid, with no sales commission charged. Inflation-indexed JGBs carry the risk of losses, as prices fluctuate in line with changes in market interest rates and fluctuations in the nationwide consumer price index. The notional principal of inflation-indexed JGBs changes in line with the rate of change in nationwide CPI inflation from the time of its issuance. The amount of the coupon payment is calculated by multiplying the coupon rate by the notional principal at the time of payment. The maturity value is the amount of the notional principal when the issue becomes due. For JI17 and subsequent issues, the maturity value shall not undercut the face amount.
Purchases of investment trusts (and sales of some investment trusts) are subject to a purchase or sales fee of up to 5.5% (tax included) of the transaction amount. Also, a direct cost that may be incurred when selling investment trusts is a fee of up to 2.0% of the unit price at the time of redemption. Indirect costs that may be incurred during the course of holding investment trusts include, for domestic investment trusts, an asset management fee (trust fee) of up to 5.5% (tax included/annualized basis) of the net assets in trust, as well as fees based on investment performance. Other indirect costs may also be incurred. For foreign investment trusts, indirect fees may be incurred during the course of holding such as investment company compensation.
Investment trusts invest mainly in securities such as Japanese and foreign equities and bonds, whose prices fluctuate. Investment trust unit prices fluctuate owing to price fluctuations in the underlying assets and to foreign exchange rate fluctuations. As such, investment trusts carry the risk of losses. Fees and risks vary by investment trust. Maximum applicable fees are subject to change; please thoroughly read the written materials provided, such as prospectuses or documents delivered before making a contract.
In interest rate swap transactions and USD/JPY basis swap transactions (“interest rate swap transactions, etc.”), only the agreed transaction payments shall be made on the settlement dates. Some interest rate swap transactions, etc. may require pledging of margin collateral. In some of these cases, transaction payments may exceed the amount of collateral. There shall be no advance notification of required collateral value or collateral ratios as they vary depending on the transaction. Interest rate swap transactions, etc. carry the risk of losses owing to fluctuations in market prices in the interest rate, currency and other markets, as well as reference indices. Losses incurred as such may exceed the value of margin collateral, in which case margin calls may be triggered. In the event that both parties agree to enter a replacement (or termination) transaction, the interest rates received (paid) under the new arrangement may differ from those in the original arrangement, even if terms other than the interest rates are identical to those in the original transaction. Risks vary by transaction. Please thoroughly read the written materials provided, such as documents delivered before making a contract and disclosure statements.

In OTC transactions of credit default swaps (CDS), no sales commission will be charged. When entering into CDS transactions, the protection buyer will be required to pledge or entrust an agreed amount of margin collateral. In some of these cases, the transaction payments may exceed the amount of margin collateral. There shall be no advance notification of required collateral value or collateral ratios as they vary depending on the financial position of the protection buyer. CDS transactions carry the risk of losses owing to changes in the credit position of some or all of the referenced entities, and/or fluctuations of the interest rate market. The amount the protection buyer receives in the event that the CDS is triggered by a credit event may undercut the total amount of premiums that he/she has paid in the course of the transaction. Similarly, the amount the protection seller pays in the event of a credit event may exceed the total amount of premiums that he/she has received in the transaction. All other conditions being equal, the amount of premiums that the protection buyer pays and that received by the protection seller shall differ. In principle, CDS transactions will be limited to financial instruments business operators and qualified institutional investors.
Transfers of equities to another securities company via the Japan Securities Depository Center are subject to a transfer fee of up to ¥11,000 (tax included) per issue transferred depending on volume. No account fee will be charged for marketable securities or monies deposited.

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