

## CHAPTER VIII

### The Derivatives Market

#### 1. Futures Trading

“Futures trading” refers to an agreement to buy or sell a specific amount of a commodity or financial instrument at a particular price on a stipulated future date. The history of futures trading is said to be as old as that of commodities trading. However, it is generally believed that the precursor of today’s fully developed futures market emerged in Japan as the account-balancing trading in rice (the rice market) conducted in Osaka in the Edo period (1603–1868). This was a method that made it possible for parties to consummate a transaction by organizing one-on-one negotiated transactions in such a way as to enable them to settle the difference without delivery of the underlying commodity or financial instrument and is considered the beginning of Japan’s futures trading. By inheriting this tradition, stock futures were traded by settling the difference in the form of forward transactions on the stock exchange in Japan in prewar years. After the war, forward transactions were prohibited by the General Headquarters (GHQ) of the Supreme Commander for the Allied Powers (SCAP) in Japan in order to curb speculative transactions, but some claim that it was partly revived in the form of margin trading with individual investors on the stock market.

In 1972, the Chicago Mercantile Exchange started trading in currency futures. The Chicago Board of Trade started trading in futures on fictitious bonds called benchmark issues in 1974, and the Kansas City Board of Trade started trading in stock index futures in 1982. And these types of futures trading spread to other countries around the world, including the introduction of trading in securities futures in Japan. Long-term government bond futures trading that started on the TSE in 1985 was the first financial futures trading conducted in Japan. More products emerged in quick succession: the OSE’s “Osaka Stock Futures 50 (OSF50)” in 1987; the OSE’s Nikkei 225 futures contracts trading and the TSE’s TOPIX futures trading in 1988; and the Tokyo Financial Exchange Inc. (TFX)’s Japanese yen short-term interest rate futures, U.S. dollar short-term interest rate futures, and yen-dollar currency futures in 1989.

Table VIII-1. Years in Which Major Financial Futures of the World Were Listed

Year	Other countries	Japan
1972	Currency futures (mark-dollar and yen-dollar) (CME)	
1976	TB futures (CME)	
1977	Treasury bond futures (CBOT)	
1981	Eurodollar interest rate futures (CME)	
1982	S&P 500 futures (CME); T-note futures (CBOT); U.K. government bond futures and pound interest rate futures (LIFFE)	
1984	FTSE 100 futures (LIFFE)	
1985		Long-term government bond futures (TSE)
1986	French government bond futures (MATIF), Nikkei average futures (SIMEX)	
1987	Japanese government bond futures (LIFFE)	
1988	CAC40 futures; PIBOR (Paris interbank offered rate) futures (MATIF); BUND futures (LIFFE)	Nikkei 225 futures (OSE); TOPIX futures (TSE)
1989	Euroyen interest rate futures (SIMEX)	Euroyen short-term interest rate futures (TIFFE)
1990	Euromark interest rate futures (LIFFE); Nikkei average futures (CME); DAX futures and BUND futures (DTB)	
1991	Interbank interest rate futures (BM&F)	
1992	USD/RUB currency futures (MICEX)	
1996	Euroyen interest rate futures (LIFFE); NASDAQ 100 futures (CME); KOSPI 200 futures (KSE)	
1997	E-mini S&P 500 futures (CME)	
1998	EURIBOR futures (LIFFE), Euro STOXX 50 futures (EUREX)	
1999	E-mini NASDAQ 100 futures (CME)	
2000	CNX Nifty Index futures (NSE)	
2001	Single stock futures (LIFFE), FTSE China A50 (SGX)	
2004	VIX index futures (CFE)	
2005	RTS stock price index futures (RTS)	
2006		Exchange FOREX margin contracts (TFX)
2008	Russell 2000 futures (ICE)	Nikkei 225 mini futures (OSE)
2010	CSI 300 futures (CFFEX)	
2019	Micro E-mini S&P 500 futures (CME), Micro E-mini Nasdaq 100 futures (CME)	

*Note:* BM&F: Brazilian Mercantile and Futures Exchange (presently BM&F BOVESPA), CBOT: Chicago Board of Trade, CFE: CBOE Futures Exchange, CFFEX: China Financial Futures Exchange, CME: Chicago Mercantile Exchange, DTB: Deutsche Terminbörse (presently Eurex), ICE: ICE Futures U.S., KSE: Korea Stock Exchange (presently KRX), LIFFE: London International Futures and Options Exchange (presently ICE Futures Europe), MATIF: Marché à Terme International de France (presently Euronext Paris), MICEX: Moscow Interbank Currency Exchange (presently Moscow Exchange), NSE: National Stock Exchange of India, RTS: Russian Trading System (presently Moscow Exchange), SIMEX: Singapore International Monetary Exchange (presently SGX), TSE: Tokyo Stock Exchange; OSE: Osaka Securities Exchange (presently Osaka Exchange), TFX: Tokyo Financial Futures Exchange (presently Tokyo Financial Exchange).

In English, “futures contracts” are transactions that are traded on the exchange, however while a futures contract can be transferred to a third party, a margin has to be deposited to provide against non-performance of the contract. Whereas a “forward contract” is a transaction between parties that cannot be transferred to a third party, and does not require a deposit of a margin. Transactions in currency or short-term interest-rate futures are forward contracts often negotiated between a bank and its client, and they are called forward-exchange agreements (FXA) or forward-rate agreements (FRA). Along with swap trading, these two types of transactions played a leading role in boosting the derivatives markets around the world in the 1990s.

## **2. Bond Futures Trading**

Trading in securities futures (Government National Mortgage Association [GNMA] certificates) started in 1974 in the United States. Trading in 10-year government bond futures started on the Tokyo Stock Exchange in 1985 with the backup that they were issued in massive amounts. This was the first financial futures trading in Japan. In 1988, superlong-term (20-year) government bond futures (discontinued in 2002, but resumed in 2014) were listed on the Tokyo Stock Exchange, and trading in U.S. Treasury bond futures, which had the largest trading volume in the world, started on the Tokyo Stock Exchange in 1989. With the trading in medium-term (5-year) government note futures that started on the Tokyo Stock Exchange in 1996, Japan had finally developed a product mix comparable to that of other countries.

Bond futures are generally traded on the basis of a fictitious issue called a benchmark issue whose price is assumed to indicate the level of yield curve then prevailing. Therefore, the price of bond futures is formed in the belief that the prices of individual bonds are above the yield curve of the benchmark issue or above a yield curve that runs parallel to it. Because a seller can choose an issue just as in a regular settlement, the seller chooses the most reasonably priced issue at that point in time, but the price of the issue to be delivered is computed by multiplying the price of the benchmark issue by a conversion factor prescribed by the exchange.

One of the characteristics of the bond futures trading conducted in Japan is that issues are traded in units with a total par value of ¥100 million, about 10 times as large as that of other countries. (This compares with \$100,000 in the case of treasury bond futures traded on the Chicago Board of Trade, or 100,000 Eurodollars in the case of BUND futures traded on the EUREX.) This is due to the fact that in cash bond transactions, bonds whose value falls short of ¥100 million are treated as a fraction of a trading unit. As bond futures trading is usually compared with that of other countries in terms of the

Table VIII-2. Trading Mechanism of Bond Futures

	Medium-term JGB futures	Long-term JGB futures	Superlong-term JGB futures
Trading object	Medium-term JGB Standardized 3%, 5-year residual	Long-term JGB Standardized 6%, 10-year residual	Superlong-term JGB Standardized 3%, 20-year residual
Delivery object	Interest-bearing 5-yr. govt. notes with a remaining life of 4 yrs. to 5 yrs. and 3 mos.	Interest-bearing 10-yr. govt. notes with a remaining life of 7 to 11 yrs.	Interest-bearing 20-yr. govt. bonds with a remaining life of 19 yrs. and 3 mos. to 20 yrs.
Contract month	3 contract months from March, June, September, December	3 contract months from March, June, September, December	3 contract months from March, June, September, December
Delivery date	20th of March, June, September, December	20th of March, June, September, December	20th of March, June, September, December
Final trading day	5 business days prior to the delivery date	5 business days prior to the delivery date	5 business days prior to the delivery date
Trading hours	8:45-11:02, 12:30-15:02, 15:30-6:00 the following day	8:45-11:02, 12:30-15:02, 15:30-6:00 the following day	8:45-11:02, 12:30-15:02, 15:30-6:00 the following day
Trading unit	¥100 million in par value	¥100 million in par value	¥100 million in par value
Price asked	¥0.01 per par value of ¥100	¥0.01 per par value of ¥100	¥0.01 per par value of ¥100
Daily price limit	Standard: Base price ±¥2.00 Maximum: Base price ±¥3.00	Standard: Base price ±¥2.00 Maximum: Base price ±¥3.00	Standard: Base price ±¥4.00 Maximum: Base price ±¥6.00
Circuit breaker mechanism	In a futures trading, if following a buy (sell) order for the central contract month placed (or contracted) at the upper (lower) price limit, there is no trade execution at a price outside the price range from the upper (lower price) limit to the immediately executable price range (for medium-term and long-term JGB futures, last traded price plus or minus 0.1 yen, for superlong-term JGB futures, last traded price plus or minus 0.3 yen) for one (1) minute, trading is suspended for 10 minutes.		

Table VIII-3. Transition in Bond Futures Trading

	Medium-term JGB futures		Long-term JGB futures		Superlong-term JGB futures	
	No. of deals	No. of contracts	No. of deals	No. of contracts	No. of deals	No. of contracts
2018	0	0	10,304,257	110,589	3,434	162
2019	0	0	9,611,513	78,887	1,957	312
2020	0	0	7,148,071	68,770	1,648	28
2021	0	0	8,187,993	102,754	1,055	40
2022	0	0	8,084,592	129,574	3,327	136

Source: Website of the Japan Exchange Group (JPX).

number of contracts, futures traded in Japan tend to be underestimated.

It is said that another characteristic of the bond futures market of Japan is that it is concentrated in trading in long-term government bond futures. This is likely to be related to the fact that the maturities of government bonds, though to a lesser extent than before, tend to be primarily in 10-year issues. Yet this stands in contrast with the U.S. and Germany where medium-term bond futures trading maintains liquidity.

Since the mid-1990s, however, the concentration of cash government bond trading on the benchmark issue, which was a phenomenon peculiar to Japan, has eased. Since the end of March 1999, the practice of designating a government bond as a benchmark issue has been discontinued, with 10-year government bond futures assuming the role played by benchmark issues. Among new products, contract for difference (CFD) futures on mini-long-term government bonds were listed on the Tokyo Stock Exchange from the end of March 2009, but trading of these instruments still accounts for less than 1% of long-term government bond futures.

### **3. Stock Index Futures Trading**

The first stock index futures contract was listed in the United States in 1982. In Japan, the Osaka Securities Exchange started trading Osaka Stock Futures 50, a futures contract for a basket of 50 stocks, in 1987. That product was followed in 1988 by the listing of Nikkei 225 futures on the Osaka Securities Exchange and TOPIX futures on the Tokyo Stock Exchange. Nikkei 300 futures were listed on the Osaka Securities Exchange in 1994. In 1998, High-Tech 40, Financial 25, and Consumer 40 stock index futures started to be traded on the Osaka Securities Exchange and sector index futures contracts for three industries, electric appliances, transportation equipment, and banks, were listed on the Tokyo Stock Exchange. The Tokyo Stock Exchange launched S&P/TOPIX 150 stock index futures in 2001, while three futures contracts based, respectively, on the MSCI Japan, the FTSE Japan, and the Dow-Jones Industrial Average indices were listed on the Osaka Securities Exchange (OSE) in 2002. RN (Russell Nomura) Prime Index futures commenced trading on the OSE in 2005, followed by Nikkei 225 mini-futures on the OSE in 2006, and the TOPIX mini, TOPIX Core30, and TSE REIT index futures on the TSE in 2008. In 2010, the OSE introduced the Nikkei Stock Average Dividend Point Index and the TSE introduced TOPIX and TOPIX Core30 dividend indexes, while the Tokyo Financial Exchange launched Nikkei 225 equity margin contracts. In 2012, the OSE began trading Nikkei Stock Average Volatility Index futures and NY Dow Jones Industrial Average futures. In 2014, CNX Nifty futures and JPX Nikkei Index 400 futures, and

Table VIII-4. Trading Mechanism of Stock Index Futures

	Nikkei 225 mini futures	Nikkei 225 futures	TOPIX futures
Trading object	Nikkei stock average	Nikkei stock average	TOPIX
Contract month	Jun & Dec: Nearest 10 contract months Mar & Sept: Nearest 3 contract months Other months: Nearest 3 contract months	Jun & Dec: Nearest 10 contract months Mar & Sept: Nearest 3 contract months	5 months in the Mar, Jun, Sept & Dec quarterly cycle
Trading unit	Nikkei stock average × 100	Nikkei stock average × 1,000	TOPIX × ¥10,000
Price asked	Units of ¥5 in Nikkei stock average	Units of ¥10 in Nikkei stock average	Units of 0.5 points in TOPIX
Maturity	On the 2nd Friday of Mar, Jun, Sept, or Dec	On the 2nd Friday of Mar, Jun, Sept, or Dec	On the 2nd Friday of Mar, Jun, Sept, or Dec
Final trading day	One business day prior to the delivery date	One business day prior to the delivery date	One business day prior to the delivery date
Trading hours	8:45–15:15, 16:30–6:00 the following day	8:45–15:15, 16:30–6:00 the following day	8:45–15:15, 16:30–6:00 the following day
Daily price limit	Standard: Base price ± 8% 2nd Expansion: Base price ± 12% Maximum: Base price ± 16%	Standard: Base price ± 8% 2nd Expansion: Base price ± 12% Maximum: Base price ± 16%	Standard: Base price ± 8% 2nd Expansion: Base price ± 12% Maximum: Base price ± 16%
Circuit breaker mechanism	If, following a contract or buy (sell) order for the central contract month for a futures trading placed at the upper (lower) price limit, there is no trade execution for one (1) minute because of a fall (rise) of over 10% of the price limit range from the upper (lower) price limit, trading is suspended for 10 minutes.		

Table VIII-5. Transition in Stock Index Futures Trading

	Nikkei 225 mini futures		Nikkei 225 futures		TOPIX futures	
	No. of deals	No. of contracts	No. of deals	No. of contracts	No. of deals	No. of contracts
2018	273,327,463	1,279,710	26,193,823	426,448	26,224,277	534,861
2019	237,577,721	500,550	22,527,189	335,127	26,345,546	561,087
2020	321,718,519	365,751	27,171,013	304,922	27,702,276	513,177
2021	224,009,276	331,413	18,073,552	247,648	23,309,732	423,004
2022	275,463,005	423,184	22,043,528	267,254	25,785,856	425,037

Source: Website of the Japan Exchange Group (JPX).

in 2016, TSE Mothers and Taiwan Capitalization Weighted Stock Index futures were listed on the Osaka Exchange, followed by FTSE China A50 Index futures in 2017 and Nikkei 225 Micro Futures in 2023. Prior to all these domestic listings for Nikkei 225 futures, the Singapore International Monetary Exchange (SIMEX, now SGX-DT) started trading SIMEX Nikkei 225 futures in 1986, followed in 1992 by dollar- and yen-denominated Nikkei 225 futures on the Chicago Mercantile Exchange (CME).

Out of the many futures contracts based on various Japanese stock indexes or listed on different exchanges, the OSE Nikkei 225 futures are the most actively traded, with many index futures also quite liquid. This creates a unique situation in which there is more than one contract with good liquidity among stock index futures.

Since June 1989, the last trading day falls, as is the case with the United States, one business day prior to maturity, and the final settlement price is decided on the basis of a special quotation (SQ) that is computed on the basis of the opening prices of component issues on the date of maturity. In addition to a three-stage daily price limit, the stock exchanges in Japan have instituted a system temporarily suspending trading called the circuit breaker system in order to control price fluctuations for domestic stock index futures trading. This does not exist in the cash market and is different to restrictions on changes in stock prices.

#### **4. Financial Futures Trading**

Currency futures trading started in the United States in 1972, and Eurodollar short-term interest rate contracts were the first interbank futures listed on a U.S. exchange, in 1982. In Japan, Euroyen futures, Eurodollar short-term interest rate futures (trading was suspended in 1998), and Japanese yen-U.S. dollar currency futures (contracts were delisted in 1992) were simultaneously listed on the Tokyo International Financial Futures Exchange in 1989. These contracts were followed by the TIFFE/TFX listings of dollar-yen futures in 1991; 1-year Euroyen futures in 1992 (trading was suspended in 1998); Euroyen LIBOR futures in 1999; 5-year and 10-year yen swap futures in 2003 (trading was suspended in 2007); and Exchange FOREX margin contracts (Click 365) on U.S. dollars, Euros, UK pounds, and Australian dollars in 2005. In 2009, the TFX listed overnight (O/N) uncollateralized call rate and general collateral (GC) spot-next (S/N) repo rate interest futures, and added margin contracts for Nikkei stock average, FTSE 100, and DAX indexes (Click 365) on the TIFFE (TIFFE was renamed the Tokyo Financial Exchange (TFX) in 2007) in 2010.

Financial futures trading in the United States began with futures and fu-

Table VIII-6. Trading Mechanism of Financial Futures

	3-month Euroyen interest rate futures	USD-JPY exchange FOREX margin contracts	Nikkei 225 margin contracts
Trading unit	Principal ¥100 million	US\$10,000	Nikkei stock average × 100
Indicating method	100 minus rate of interest (%; Act/360 day basis)	Yen equivalent per U.S. dollar	Yen equivalent per stock price index
Price asked	0.005 (¥1,250)	0.01 (¥100)	¥1 (¥100)
Contract month	Mar, Jun, Sep, Dec, cycle (20 contract months traded at any one time)	No	No
Final trading day	Two business days prior to the third Wednesday of the contract month	No	No
Final settlement day	Business day following the final trading day	No	No
Settlement method	Settlement of differences (the final settlement price is equal to ¥100 less TI-BOR rounded off at the fourth decimal places)	Making up differences	Making up differences
Daily price limit	No	No	No
Trading hours	8:45–11:30, 12:30–15:30, 15:30–20:00	Monday 7:10 a.m. to 6:55 a.m. the following day Tuesday to Thursday 7:55 a.m. to 6:55 a.m. the following day (1 hour each during U.S. Daylight Savings Time)	Friday 7:55 a.m. to 6:00 a.m. the following day 8:30 a.m.–6:00 a.m. the following day (5:00 a.m. during U.S. Daylight Savings Time)

Table VIII-7. Transition in Financial Futures Trading

	3-month Euroyen interest rate futures		USD-JPY exchange FOREX margin contracts		Nikkei 225 margin contracts	
	No. of deals	No. of contracts	No. of deals	No. of contracts	No. of deals	No. of contracts
2018	1,423,666	102,874	8,363,218	534,564	4,266,773	218,858
2019	855,250	58,550	5,352,811	523,564	5,254,459	200,762
2020	263,657	15,656	7,181,607	398,555	11,096,182	167,049
2021	74,206	6,080	6,326,876	373,916	9,730,043	45,919
2022	3,263	0	15,061,941	370,826	10,398,917	59,993

Source: Website of the Tokyo Financial Exchange.



tures options on commodity exchanges while European countries introduced financial futures exchanges for these products. In Japan, futures and options on bonds and stocks are traded on the stock exchanges, while interbank interest rate and currency futures and options are traded on the TFX, a separate market established by some banks and securities companies.

On the TFX, trading has been concentrated from the start in yen short-term rate futures, with little trading in other futures. To increase the liquidity of those financial futures, the market-making system was introduced for dollar short-term rate futures and yen-dollar currency futures in 1990, dollar-yen currency futures in 1991, and options on yen short-term rate futures in 1992. However, their liquidity did not improve much.

Meanwhile, in 1996 TIFFE introduced a TIFFE-SPAN (Standard Portfolio Analysis of Risk) system on the basis of which the amount of margin commensurate with the risks involved is computed. Moreover, in an effort to stimulate financial futures trading, it linked the prices of its products to those of the London International Financial Futures and Options Exchange (LIFFE) and extended its trading hours in the same year. It made efforts to stimulate trading by introducing the night-trading system for dollar-yen currency futures in 1997. Since 1995, however, TIFFE/TFX's business, which had grown during the first half of the 1990s, has been decreasing on account of the extremely low interest rate climate. Meanwhile, trading of Click 365, which was listed with an eye to the expansion of foreign exchange margin transactions, and trading of Click Stock 365, which is linked with Nikkei average stock prices, have established a presence.

In March 2023, the Japanese yen futures contract was replaced by the three-month uncollateralized overnight futures contract (TONA three-month futures).

## 5. Options Trading

Options trading refers to an agreement to trade the right to buy or sell a specific amount of a commodity or a financial instrument at a fixed price (the exercise price) within a specified period in the future. The right to become the buyer is called a call option, and the right to become the seller is called a put option.

The history of options trading goes back to antiquity. According to Aristotle, the first known option trading was written by Thales (ca. 620–ca. 555 BC), a Greek philosopher, on the sale of an olive press. The Chicago Board Options Exchange (CBOE) established in 1973 is the first fully developed options trading market. This provided a method that made it possible for parties to consummate a transaction by organizing one-on-one negotiated trans-

Table VIII-8. Years in Which Major Financial Options of the World Were Listed

Year	Other countries	Japan
1973	U.S. options on individual stocks (CBOE)	
1974	U.S. options on individual stocks (AMEX, PHLX, PCX)	
1978	U.K. options on individual stocks (LTOM)	
1982	Currency options (PHLX), T-bond futures options (CBOT)	
1983	S&P 100 options; S&P 500 options (CBOE); S&P 500 futures options (CME)	
1984	Currency futures options (CME), FTSE 100 options (LIFFE)	
1987	Pound interest rate futures options (LIFFE), options on French individual stocks (MONEP)	
1988	French government bond futures options (MATIF); CAC40 options (MONEP); BUND futures options (LIFFE)	
1989		Bond OTC options (OTC); Nikkei 225 options (OSE); Nikkei 225 options (OSE); TOPIX options (TSE)
1990	Options on individual German stocks (DTB); Euroyen interest rate futures options (SIMEX); Euromark interest rate futures options (LIFFE); DAX options and BUND futures options (DTB)	Long-term government bond futures options (TSE)
1991		Euroyen short-term rate futures options (TFX)
1992	Nikkei average futures options (SIMEX)	
1994	JGB futures options (SIMEX)	
1997	KOSPI 200 options (KSE)	Options on individual stocks (TSE, OSE)
1998	EURIBOR futures options (LIFFE), Euro STOXX 50 options (EUREX), TAIEX options (TAIFEX)	
2000	U.S. options on individual stocks (ISE)	
2001	Nifty options (NSE), SENSEX options (BSE)	
2006	VIX index options (CBOE)	
2013	Nifty Bank option (NSE)	

*Note:* AMEX: American Stock Exchange (presently NYSE MKT), BSE: Bombay Stock Exchange, CBOE: Chicago Board Options Exchange, CBOT: Chicago Board of Trade, CME: Chicago Mercantile Exchange, DTB: Deutsche Terminbörse (presently EUREX), ISE: International Securities Exchange, KSE: Korea Stock Exchange (presently KRX), LIFFE: London International Futures and Options Exchange (presently ICE Futures Europe), LTOM: London Traded Options Market (presently ICE Futures Europe), MATIF: Marché à Terme International de France (presently Euronext Paris), MONEP: Marché des Options Négociable de Paris (presently Euronext Paris), NSE: National Stock Exchange of India, PHLX: Philadelphia Stock Exchange (presently Nasdaq OMX PHLX), PCX: Pacific Exchange (presently NYSE Arca), SIMEX: Singapore International Monetary Exchange (presently SGX), TAIFEX: Taiwan Futures Exchange, TSE: Tokyo Stock Exchange, OSE: Osaka Securities Exchange (presently Osaka Exchange), TFX: Tokyo International Financial Futures Exchange (presently Tokyo Financial Exchange).

actions in such a way as to enable them to settle the difference without delivery of the underlying commodity or financial instrument, similar to a futures trading, and is considered to have been the groundbreaking event in the history of options trading.

The options trading started by the CBOE in 1973 spread to other financial instruments, such as currency options trading, bond options trading, and bond futures options trading, in 1982; stock index options trading, and stock index futures options trading in 1983; and to currency futures options trading in 1984. And it has since spread to major financial markets worldwide. In Japan, OTC bond options trading (trading in bonds with options) was introduced in April 1989. The Osaka Securities Exchange introduced Nikkei 225 options in June, the Tokyo Stock Exchange introduced TOPIX options in October, and the Nagoya Stock Exchange introduced Options 25 in October 1989 (discontinued in 1998). The Tokyo Stock Exchange introduced long-term government bond futures options in 1990, and the Tokyo International Financial Futures Exchange (TIFFE) introduced yen short-term rate futures options in 1991. In addition, the Osaka Securities Exchange introduced Nikkei 300 options in 1994, and both the Tokyo Stock Exchange and the Osaka Securities Exchange introduced options on individual stocks in 1997. In 1998, the Osaka Securities Exchange introduced three industry-specific stock index options (High-Tech 40, Financial 25, and Consumer 40). In 2015 it introduced Nikkei 225 Weekly options.

Listed options are traded on exchanges. While they can be transferred to a third party, the seller is required to deposit a margin with the exchange to provide against defaults on the contract. OTC options trading is a one-on-one transaction, and it cannot be transferred to a third party, but the seller is not required to deposit a margin. Unlike stock options and stock index options, many of the currency or interest rate options are traded with banks or securities companies on the OTC market.

## **6. Bond Options Trading**

Treasury bond (T-bond) options trading (on the Chicago Board Options Exchange) and T-note options trading (on the American Stock Exchange) started simultaneously in 1982 constituted the first trading in listed bond options. And T-bond futures options were traded on the Chicago Board of Trade for the first time in 1982. In Japan, the first bond options trading was started on the OTC market in the name of “trading in bonds with options” in April 1989. Trading in long-term government bond futures options started in 1990, and trading in medium-term government note futures options (discontinued in 2002) started in 2000, both on the TSE.

Table VIII-9. Trading Mechanism of Bond Options Trading

	OTC bond options	Long-term government bond futures options	Medium-term government bond futures options
Trading object	All debt securities other than convertible bonds and warrant bonds	Call options or put options on long-term government bond futures	Call options or put options on medium-term government bond futures
Contract months	Free	March, June, September, December cycle (nearest two contract months traded at any one time), other months (up to nearest two contract months)	March, June, September, December cycle (nearest two contract months traded at any one time), other months (up to nearest two contract months)
Final trading day	—	The last trading day of the month immediately preceding Mar, Jun, Sep, and Dec.	The last trading day of the month immediately preceding Mar, Jun, Sep, and Dec.
Delivery date	Within one year and 3 months from the date of contract	Business day following the trading day	Business day following the trading day
Trading unit	¥100 million in par value	One contract on long-term JGB futures	One contract on medium-term JGB futures
Price asked	—	¥0.01 per par value of ¥100	¥0.01 per par value of ¥100
Option exercise price	Free	± 10 prices at ¥0.5 intervals, additional prices set according to price movement in underlying futures	± 10 prices at ¥0.5 intervals, additional prices set according to price movement in underlying futures
Daily price limit	—	Standard: Base price ± ¥2.10 Maximum: Base price ± ¥3.00	Standard: Base price ± ¥2.10 Maximum: Base price ± ¥3.00
Circuit breaker mechanism	—	When circuit breaker mechanisms are in place for the underlying futures contracts	When circuit breaker mechanisms are in place for the underlying futures contracts
Method of exercising the right	Free	American option	American option

Unlike bond futures trading, which is conducted on the basis of a benchmark issue, OTC bond options are traded on the basis of individual issues, such as government bonds, corporate bonds, or foreign bonds. Because they are traded on the OTC market, bond options agreements cannot be transferred to a third party (most of the transactions are for government bonds). As with government bond futures trading, bond options are traded in units of ¥100 million in par value. Because their life (from the date of contract to the date of delivery) is restricted to a maximum period of one year and three months, and as they cannot be resold to a third party, contracts usually run a relatively long period—six months or one year.

Table VIII-10. Transition in Bond Options Trading

	OTC bond options		Long-term government bond futures options		Medium-term government note futures options	
	Trading value	Outstanding price	No. of deals	No. of contracts	No. of deals	No. of contracts
2018	2,145,579	29,494	783,545	7,720	–	–
2019	2,188,084	17,090	631,807	4,411	–	–
2020	1,805,445	24,999	323,210	3,710	–	–
2021	1,447,264	20,158	193,708	1,159	–	–
2022	1,808,010	35,140	85,960	300	–	–

Source: The websites of the Japan Exchange Group (JPX) and the Japan Securities Dealers Association (JSDA).

By contrast, long-term government bond futures options are available in the form of listed American options (the option can be exercised any day during its life), and their trading mechanism is similar to that of long-term government bond futures. Whereas long-term government bond futures have only three contract months with a maximum period of nine months, long-term government bond futures options offer up to four contract months with a maximum period of six months. In addition, compared with OTC bond options, transactions in long-term government bond futures and long-term government bond futures options are concentrated in those with a short remaining life.

In Western countries where options trading has long been conducted, investors are quite familiar with the system. However, in Japan, where there is no custom of options trading, investors utilize options trading less often than futures trading. Particularly, the amount of long-term government bond futures options trading is far smaller than that of long-term government futures trading. This is because investors' interest is concentrated in outright transactions that deal only in options, and covered transactions are not made in conjunction with underlying assets (namely, long-term government bond futures). On the other hand, in conducting OTC bond options trading, investors follow the strategy of combining underlying assets with covered call or target buying.

## 7. Stock Index Options Trading

Trading in listed options on individual stocks started in 1973 on the Chicago Board Options Exchange (CBOE). In 1983, the CBOE introduced S&P 100 options (the first stock index options). The Chicago Mercantile Exchange

Table VIII-11. Trading Mechanism of Stock Index Options

	Nikkei 225 options	TOPIX options
Trading object	Call options or put options on Nikkei stock average	Call options or put options on TOPIX
Contract months	Jun and Dec contracts are nearest 16 months, Mar and Sept contracts are nearest 3 months, other contract months are 6 months (Mini Options are nearest 4 weekly contracts)	June and Dec contracts are nearest 10 months, Mar and Sep contacts are nearest 3 months, other contracts months are nearest 6 months
Trading unit	Nikkei stock average $\times$ 1,000 (Mini is one tenth.)	TOPIX $\times$ ¥10,000
Price asked	¥50 or less: ¥1; over ¥50 up to ¥1,000: ¥5; over ¥1,000: ¥10	0.1 points for prices up to 20 points, 0.5 points for prices over 20 points
Maturity	On the 2nd Friday of the delivery month (Mini is every Friday)	On the 2nd Friday of the delivery month
Final trading day	One business day prior to the delivery date	One business day prior to the delivery date
Trading hours	9:00–15:15, 16:30–5:30 the following day	9:00–15:15, 16:30–5:30 the following day
Option exercise price	Initially, $\pm$ 8 strike prices at ¥250 intervals; $\pm$ 8 strike prices at ¥125 intervals for closest 3 contract months when less than 3 months remaining	Over-4 month contracts: $\pm$ 6 prices at 50-point intervals (if 4 months, same as 4 months or less), contracts of 4 months or less: $\pm$ 9 prices at 25-point intervals
Method of exercising the right	European option	European option
Daily price limit	Normal: 4, 6, 8 or 11% according to the base price 1 <sup>st</sup> Expansion: Base price + 3% 2 <sup>nd</sup> Expansion: 1 <sup>st</sup> Expansion + 3%	Normal: 4, 6, 8 or 11% according to the base price 1 <sup>st</sup> Expansion: Base price + 3% 2 <sup>nd</sup> Expansion: 1 <sup>st</sup> Expansion + 3%
Circuit breaker mechanism	Possible interruption in connection with the actuation of the circuit breaker mechanism for Nikkei 225 futures trading	Possible interruption in connection with the actuation of the circuit breaker mechanism for TOPIX futures trading

(CME) listed S&P 500 futures options (the first stock index futures options ever) and the New York Stock Exchange (NYSE) listed the New York Stock Exchange Composite Stock Index futures options in 1983. In Japan, a series of stock index options have been listed—the Nikkei 225 stock index options on the Osaka Securities Exchange in June 1989, Options 25 on the Nagoya Stock Exchange in September of the same year (discontinued in 1998), and the TOPIX options on the Tokyo Stock Exchange in 1989. In 1994, the Nikkei 300 stock index options were introduced on the Osaka Securities Exchange (discontinued in 2010). Three industry-specific stock index options

Table VIII-12. Transition in Stock Index Options Trading

	Nikkei 225 options		TOPIX options	
	No. of deals	Open Interest	No. of deals	Open Interest
2018	35,502,311	1,909,369	179,262	69,113
2019	29,763,572	1,546,360	238,318	99,876
2020	28,666,550	1,253,114	306,978	78,589
2021	24,187,070	1,107,069	431,916	83,711
2022	24,034,266	1,407,507	572,592	98,128

Source: Website of the Japan Exchange Group (JPX).

(High-Tech 40, Financial 25, and Consumer 40, discontinued in 2002) were also introduced on the Osaka Securities Exchange in 1998, and S&P/TOPIX 150 options (discontinued in 2002) were listed on the Tokyo Stock Exchange in 2001. In 2015, the Osaka Exchange introduced weekly options for the Nikkei 225 options, and in May 2023, weekly options were converted to Nikkei 225 mini options with a trading unit of 1/10.

In Japan, listed stock index options (the Nikkei 225 options) are most actively traded on the Osaka Securities Exchange. Unlike stock index futures, other stock index options are scarcely traded in Japan.

A comparison of the trading mechanisms of the Nikkei 225 options, the TOPIX options, and the SGX's Nikkei average futures options shows that while domestically traded stock index options are based on cash stock options, the Nikkei average futures options traded on the SGX are based on futures options. Another difference in the trading mechanisms is that the Nikkei 225 options and SGX's Nikkei average futures options offer long-term options. Meanwhile, in computing the amount of margins, all exchanges have adopted the method of netting margins in accordance with risks called Standard Portfolio Analysis of Risk (SPAN) developed by the Chicago Mercantile Exchange, and there is no significant difference among them. In addition, when the circuit breaker mechanism is tripped in stock index futures trading, options trading is also halted.

## 8. Securities Options Trading

Options on individual stocks were first listed on the Chicago Board Options Exchange in 1973, with call options. In 1977, put options were also listed on the same exchange. While the options on individual stocks were first listed and then stock index options were listed in other countries, in Japan stock in-

Table VIII-13. Trading Mechanism of Securities Options

	Marketable securities options (OSE)
Trading object	Call options or put options on domestically listed marketable securities
Contract month	Nearest two contract months + nearest two months from March, June, September and December
Delivery date	5th day from the exercise of the right
Maturity	On the 2nd Friday of the delivery month
Final trading day	One business day prior to the delivery date
Trading unit	The trading unit of the underlying stock
Price asked	16 stages from ¥0.1 to ¥5,000 depending on the price of the underlying security
Option exercise price	± 2 prices at 16 stages from ¥25 to ¥5 million depending on the price of the underlying stock, with additional prices available afterwards based on market
Daily price limit	The value derived by taking the base price of the security for the option trade on the designated market as of the trade date and multiplying it by 25%
Position limit	Set for each eligible security
Trading hours	9:00–11:35, 12:30–15:15
Method of exercising the right	European option

Table VIII-14. Transition in Securities Options Trading

	OSE Securities Options	
	No. of deals	No. of contracts
2018	914,773	69,923
2019	1,237,146	77,909
2020	1,347,612	59,023
2021	2,032,945	28,011
2022	2,059,828	46,022

Source: Website of the Japan Exchange Group (JPX).

dex options were introduced in 1989 first and equity options on 20 individual stocks were listed afterward on the Tokyo Stock Exchange and the Osaka Securities Exchange in 1997 (seven of them were listed on both exchanges). Since then, option trading has been extended to all listed securities along with a name change to “securities options.” On March 24, 2014, the derivatives market on the Tokyo Stock Exchange was merged with the derivatives market on the Osaka Exchange, and individual securities options trading on the Osaka Exchange was integrated with the marketable securities options



trading on the Tokyo Stock Exchange as of that date.

Soon after the Chicago Board Options Exchange was established, the advisability of introducing securities options to Japan was considered. However, it is said that their introduction was postponed for more than 20 years for fear that they might compete with margin trading, a major source of income for small- to medium-sized securities companies.

The mechanism of trading in marketable securities options is basically identical to that of stock index options but differs from that of stock index options trading in that the securities certificate underlying an option must be delivered to the buyer and that the final settlement price is decided on the basis of the closing price of the underlying securities.

Although it was thought that securities options might compete with margin trading, they were not as actively traded. This is because there is no tradition of trading in options in Japan, investors are not familiar with options trading, and, unlike their Western counterparts, few individual investors are interested in options trading. Options are traded in combination with their underlying assets. In Japan, capital gains earned from trading underlying equities and from securities options are subject to separate taxation. However, investors are not allowed to offset gains and losses between these two categories. This is believed to have discouraged individual investors from participating in securities options trading. In other countries, brokers and dealers are granted preferential treatment for their market-making in relatively illiquid securities options. In a similar move, the Osaka Securities Exchange and Tokyo Stock Exchange introduced the Securities Options Market-Maker Program and TSE Securities Option Supporter system, respectively. These actions, however, have not resulted in any significant increase in the trading of these options in Japan.

## **9. OTC Derivatives Trading**

The market on which derivatives trading achieved remarkable growth around the world in the 1990s was not the exchanges but the OTC market. Particularly, spurred by the financial liberalization, the interest rate swap trading that started in 1982 has spread not only to banking institutions, but also to business corporations and has come to play the leading role on the derivatives market. As statistics on derivatives trading conducted on the exchanges have been well kept, it was easy to follow changes occurring in their trading, but because there was no organization that kept track of the derivatives trading conducted on the OTC market, it was extremely difficult to find out how it was doing. To remedy the situation, the Bank for International Settlements (BIS) decided to investigate, beginning in 1995, the derivatives markets

Table VIII-15. OTC CFD transaction balance

	Number of accounts	Margin etc. Balance	Open balance (by underlying asset)			
			Individual stock-related	Stock index-related	Bond-related	Other Securities-related
End of March 2018	185,131	243	40	285	24	17
End of September 2018	214,272	277	59	366	14	22
End of March 2019	248,497	309	31	390	14	22
End of September 2019	277,426	381	29	487	26	28
End of March 2020	314,097	545	18	440	7	30
End of September 2020	361,471	605	78	690	20	28
End of March 2021	409,729	678	140	805	26	28
End of September 2021	456,123	891	183	1,370	65	29
End of March 2022	551,825	1,067	161	1,341	130	34
End of September 2022	671,089	1,179	113	1,668	119	37
End of March 2023	836,038	1,305	119	1,671	220	33

Note: Transaction amounts are based on notional principal (contract price × trading unit × quantity) and the transaction balance is the gross balance of long and short positions.

Table VIII-16. Status of OTC CFD trading

	Individual stock-related		Stock index-related		Bond-related		Other Securities-related	
	No. of deals	Trading value	No. of deals	Trading value	No. of deals	Trading value	No. of deals	Trading value
2018	249,173	1,826	9,165,358	217,005	8,217	981	798,917	1,913
2019	237,945	1,122	10,550,957	190,759	11,086	1,339	1,401,035	2,160
2020	884,925	4,581	30,194,537	507,076	14,796	1,572	2,612,288	2,646
2021	1,221,006	8,374	28,449,829	597,074	42,979	3,563	1,580,413	1,363
2022	3,250,894	11,724	54,805,536	1,429,909	256,509	23,804	1,486,192	2,267

along with—and on the occasion of—the triennial investigation of the foreign exchange markets from 1986 to grasp the state of trading in derivatives on the OTC market worldwide.

According to a survey of the Japanese OTC derivatives market conducted in April 2022, the daily average notional value of OTC interest rate derivatives traded in Japan (excluding FS swaps) was \$50.7 billion, representing a decrease of 32% from the previous survey in April 2019 (the results compare against a daily global total of \$5.2 trillion and a decrease of 19%). By contract type, interest rate swaps were \$48.5 billion (overnight index swaps: \$26.9 billion, others: \$21.6 billion) (down 30%) (overnight index swaps:

Table VIII-17. Status of over-the-counter CFD brokerages, etc.

	Individual stock-related		Stock index-related		Bond-related		Other Securities-related	
	No. of deals	Trading value	No. of deals	Trading value	No. of deals	Trading value	No. of deals	Trading value
2018	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0

Source: Compiled from JSDA website.

+285%, others: down 65%), interest rate options were \$3.1 billion (down 55%) and FRAs were \$200 million (down 76%). The total notional value of the outstanding OTC derivatives contracts of financial institutions in Japan as of the end of June 2022 stood at \$53.9 trillion, down 3% from June 2016, relative to a total of \$503 trillion and a 4% decrease worldwide. Looking at the breakdown of the total by contract type, interest rate swaps decreased by 5% to account for 83.3%, interest rate options increased by 12% to account for 15.1%, and FRAs increased by 1% to account for 1.5%.

At the G20 Pittsburg Summit in 2009, it was agreed that all OTC derivatives contracts standardized by the end of 2012 should be settled through central clearing organizations (central counterparties). In Japan, Japan Securities Clearing Corporation (JSCC), which belongs to the Japan Exchange Group (JPX), began clearing and settlement of CDS in July 2011, followed by clearing of interest rate swaps starting in October 2012. JSCC settles ¥70 trillion to ¥100 trillion worth of yen-denominated interest rate swaps, which account for 90% of all interest rate swaps, on a monthly basis.

## 10. Credit Derivatives Trading

“Credit derivatives trading” refers to trading in credit risks involved in loans and corporate bonds in the form of swaps and options. While conventional derivatives trading bought or sold market risks, credit derivatives trading deals in credit risks. Credit risks trading may be characterized as trading in guarantees in that it not only deals in guarantees against default but also provides a variety of products that cover the risk of declining creditworthiness caused by a deterioration of business performance.

Credit derivatives are traded largely in three typical types: credit default

Table VIII-18. Credit Derivatives Trading in Japan

(Outstanding balance of notional principal; US \$ million)

	OTC trading		Credit default swap			Total return swap			Credit spread product			Credit-linked notes			Other products		
	Total	Total	Sell	Buy	Total	Sell	Buy	Total	Sell	Buy	Total	Issue	Purchase	Total	Sell	Buy	
																	Total
June 2013	1,061,005	1,055,262	536,826	518,436	542	143	399	130	65	65	4,868	1,838	3,030	203	86	68	
Dec. 2013	853,899	848,494	427,571	420,923	455	119	336	0	0	0	4,815	1,815	3,000	132	75	187	
June 2014	785,138	778,255	389,898	388,358	367	123	244	0	0	0	5,999	2,316	3,683	514	455	145	
Dec. 2014	710,060	703,689	356,398	347,292	261	104	157	0	0	0	5,664	2,471	3,193	444	394	133	
June 2015	563,687	552,855	280,527	272,330	4,415	2,260	2,155	0	0	0	6,144	2,864	3,280	270	221	117	
Dec. 2015	518,641	507,140	261,156	245,986	4,313	2,101	2,212	0	0	0	6,967	3,591	3,376	223	173	57	
June 2016	510,693	505,278	255,136	250,141	5,414	2,054	3,360	0	0	0	9,209	4,784	4,425	384	384	59	
Dec. 2016	441,444	437,525	219,801	217,721	3,918	1,522	2,396	0	0	0	9,071	5,340	3,731	353	353	50	
June 2017	411,471	406,931	203,595	203,335	4,537	1,804	2,733	0	0	0	8,862	6,291	2,571	138	138	49	
Dec. 2017	381,682	375,022	187,255	187,769	6,656	2,802	3,854	0	0	0	9,410	6,548	2,862	159	159	50	
June 2018	382,030	377,141	189,032	188,108	4,812	2,091	2,721	82	82	0	10,438	7,465	2,973	262	262	0	
Dec. 2018	384,498	380,788	189,823	190,965	3,707	1,647	2,060	0	0	0	10,156	7,265	2,891	342	342	0	
June 2019	391,418	387,741	194,000	193,741	3,683	2,174	1,509	0	0	0	10,133	7,098	3,035	445	445	0	
Dec. 2019	416,496	411,549	207,163	204,390	4,947	2,390	2,557	0	0	0	9,785	6,691	3,094	562	562	0	
June 2020	481,306	473,848	241,711	232,137	7,459	2,547	4,912	0	0	0	9,062	5,986	3,076	620	620	0	
Dec. 2020	510,502	506,011	259,276	246,734	4,495	1,950	2,545	0	0	0	8,469	5,134	3,335	925	925	0	
June 2021	534,398	525,860	270,351	255,509	8,546	4,627	3,919	0	0	0	7,824	4,710	3,114	645	645	0	
Dec. 2021	483,199	475,828	239,865	235,962	7,376	5,212	2,164	0	0	0	7,450	4,281	3,169	344	344	0	
June 2022	512,324	504,532	255,902	248,631	7,794	3,366	4,428	0	0	0	6,585	453	6,132	307	307	0	
Dec. 2022	575,677	569,641	286,388	283,254	6,037	2,842	3,195	0	0	0	5,928	2,599	3,329	1,104	828	276	
June 2023	426,437	419,061	208,655	210,408	7,371	4,520	2,851	0	0	0	4,836	1,946	2,890	649	400	249	

Note: Figures for "credit-linked notes" and "other products" that had been included in credit derivatives were excluded from the scope of the survey from 2016 onwards. Data shown is for reference purposes only.

Source: Compiled based on the data on chronological coefficients in Bank of Japan, "A Survey of Regular Market Reports Concerning Derivatives Trading." (<http://www.boj.or.jp/en/statistics/bis/yoshi/index.htm>)

swaps (CDS), total return swaps (TRS), and credit-linked notes (CLN). A CDS is a type of options trading that guarantees the credit risks involved in a loan, and when the borrower defaults on a loan underlying the CDS the damage caused by such default is guaranteed. CDS derives its name from the form in which the payment of a premium is swapped. Next, a TRS is a deal that swaps the total profit or loss (coupon and evaluated profit or loss) with the market rate, and it is used when the holder of a credit cannot sell it. And a CLN is a deal that links credit risks to a bond issued by the issuer of the underlying notes. Therefore, it may be said that a CLN is a CDS based on a bond instead of a guarantee. A CLN is redeemed in full on maturity unless the company designated in the contract defaults on its obligations, but when the company defaults the CLN is redeemed at a reduced value prior to maturity. While a CDS is concluded under the assumption that the guaranteeing company has an adequate capacity to guarantee, a CLN is guaranteed by the purchase of a bond. Therefore, a CLN has the advantage in that it can be concluded regardless of the credit standing of the investor.

According to the data published by the Bank of Japan, the total notional value of outstanding credit derivatives in Japan was accelerating in growth from 2003 on, increasing by a factor of 83 from the end of December 2002 to the end of June 2011. However, the value declined almost constantly and was down to half or less of its peak by the end of June 2015. The notional value of outstanding credit derivatives has also been on a decrease in the U.S. after hitting a peak in 2008, but the degree of decline has not been as significant as that of Japan. During the period from 2008 when the nominal value of outstanding credit derivatives recorded its peak in the U.S., the outstanding balance of credit derivatives in Japan doubled over a period of three years from then. However, the outstanding balance halved from the end of June 2011 to the end of June 2015, reflecting erratic movements on the market. After touching bottom in December 2017, the balance has continued to increase thereafter.

## **11. Central Clearing Organization (Central counterparty)**

Netting is the method used to settle combined or aggregated financial obligations. Netting between two parties is called bilateral netting, and netting with multiple parties is called multilateral netting. A central counterparty (CCP) is an intermediary for all transactions and acts as a unified counterparty for both sellers and buyers. Netting with the introduction of a CCP is bilateral netting but is usually called multilateral netting. Netting through CCPs has been introduced for interbank clearing, cash transactions and derivatives trading on exchanges. Since the bankruptcy of Lehman Brothers, which en-

Table VIII-19. Number of interest rate swap trades cleared and notional amount cleared

(Unit: Yen, millions)

		2018	2019	2020	2021	2022
total	Number of trades cleared	76,190	85,690	72,772	75,253	117,167
	Cleared notional	993,439,660	999,363,367	760,897,239	784,875,142	1,111,306,941
0-2 years	Number of trades cleared	8,321	6,673	5,404	4,677	5,397
	Cleared notional	374,734,654	323,800,273	237,161,688	210,679,329	218,964,747
2-5 years	Number of trades cleared	8,303	9,623	7,936	8,968	13,043
	Cleared notional	191,777,780	208,972,517	143,914,017	185,013,650	224,320,309
5-10 years	Number of trades cleared	19,781	23,514	19,902	21,200	34,045
	Cleared notional	230,129,503	259,850,668	199,091,532	215,961,736	332,935,063
10-30 years	Number of trades cleared	37,419	42,758	36,733	37,435	60,251
	Cleared notional	192,395,357	201,187,331	175,189,978	167,668,061	326,438,326
Over 30 years	Number of trades cleared	2,366	3,122	2,797	2,973	4,431
	Cleared notional	4,402,366	5,552,579	5,540,024	5,552,367	8,648,496

Source: Compiled from JSCC website.

Table VIII-20. Number of CDS trades cleared and cleared notional amount

(Unit: Yen, millions)

		2018	2019	2020	2021	2022
total	Number of trades cleared	1,629	1,650	1,409	975	1,426
	Cleared notional	1,294,780	2,341,384	2,854,088	2,099,986	2,273,773
	Outstanding cleared notional	1,590,298	2,689,205	4,150,758	5,111,080	6,014,799
index total	Number of trades cleared	460	746	696	329	623
	Cleared notional	714,850	1,823,990	2,440,605	1,706,000	1,844,825
	Outstanding cleared notional	782,425	1,626,175	2,908,970	3,705,990	4,574,840
single name total	Number of trades cleared	1,169	904	713	646	803
	Cleared notional	579,930	517,394	413,483	393,986	428,948
	Outstanding cleared notional	807,873	1,063,030	1,241,788	1,439,959	1,439,959

Source: Compiled from JSCC website.

gaged in OTC derivatives transactions without a central counterparty, CCPs have been utilized for OTC derivatives transactions, which were previously unregulated.

The Japan Securities Clearing Corporation (JSCC), a member of the Japan Exchange Group, is the CCP for derivatives trading in Japan, and conducts a wide range of clearing services for exchange-traded transactions, OTC deriv-

atives transactions (CDS transactions and interest rate swaps) and OTC government bond transactions. On July 27, 2020, JSCC merged with the Japan Commodity Clearing Corporation House (JCCH) and added listed commodity derivative transactions, including precious metals, rubber, agricultural products, and energy futures transactions that were previously handled by JCCH to its clearing services.

“Compression” refers to the process of reducing the gross balance of transactions (number of transactions, notional value) without changing the risk exposure through the simultaneous cancellation of offsetting buy and sell transactions where the same clearing participant has a trading obligation. Compression enables clearing participants to reduce their trading obligations and leverage ratio by compressing their balance of transactions. JSCC introduced a compression scheme in June 2015, and in March 2016, it relaxed the requirements for undertaking compression (requirement for the consent of the counterparty to the underlying transaction was dropped) and introduced an ad hoc compression scheme. JSCC notifies clearing participants of the compression date in advance, and compression takes place approximately once a month. Under the ad hoc scheme, compression can be implemented at any time when an application is made by a clearing participant or customer. If JSCC confirms that the matching conditions are the same for pairs of trades with offsetting positions, the unwind becomes effective on the next business day following the date of application.