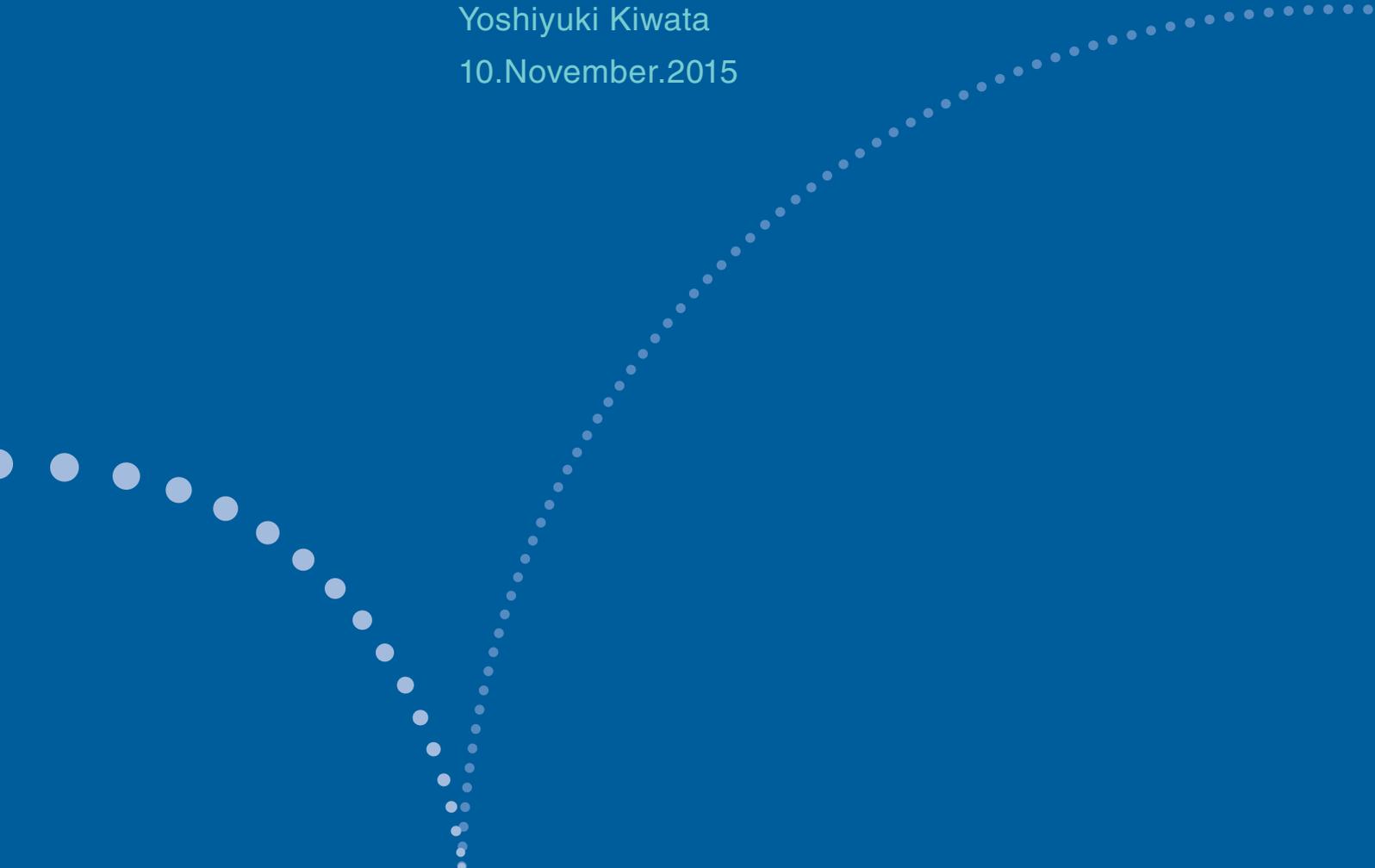


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Japanese exchanges set to keep upgrading infrastructure as JGB futures market turns 30 years old

Yoshiyuki Kiwata

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Executive Summary



Yoshiyuki Kiwata

Sales Manager

GWS IT Solution Department I

This year is the 30th anniversary of the JGB futures market, established by the Tokyo Stock Exchange on October 19, 1985. Although its infrastructure has undergone various upgrades over the past decade to better meet investors' needs, JGB futures trading volume has stagnated. Meanwhile, overseas investors' share of that volume has grown to over 50%. With the Japan Exchange Group placing priority on derivatives markets, the JGB futures market will hopefully benefit from its efforts going forward.

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This year is the 30th anniversary of JGB futures trading's launch by the Tokyo Stock Exchange (TSE) on October 19, 1985. JGB futures trading has since undergone numerous changes, including new product launches, at both the TSE and Osaka Securities Exchange (OSE; currently Osaka Exchange). Futures trading was ultimately consolidated at the Osaka Exchange in March 2014, when the Japan Exchange (JPX) Group merged the TSE and OSE's derivative markets.

Market infrastructure's evolution over past 10 years

Among various initiatives to upgrade the JGB futures market's infrastructure over the past three decades, we focus below on post-2005 upgrades that are most notable from three standpoints: (1) adoption of global trading systems, (2) extension of market hours toward round-the-clock trading and (3) high-speed trade execution.

In JGB futures and option markets, changes in trading practices and new product launches have often coincided with trading system upgrades in recent years. Major system upgrades include (1) commissioning of a new derivatives trading system in January 2008, (2) installation of the Tdex+ option trading system in October 2009, (3) installation of the Tdex+ futures trading system in November 2011 and (4) migration from Tdex+ to J-GATE (JPX Global Access Trading Engine) in conjunction with the merger of the TSE and OSE's derivative markets in March 2014. Most of these systems were developed based on overseas trading systems.

The Tdex+ system, commissioned in 2009, was modeled after LIFFE CONNECT, a derivatives trading platform of NYSE Liffe, an exchange operated by the erstwhile

NYSE Euronext Group. At the time, LIFFE CONNECT set the global standard in terms of performance and functionality. Tdex+ was the first trading system that the TSE developed to an overseas exchange's standard specifications since it first branched into derivatives trading. In March 2014, when the JPX Group consolidated its derivatives markets, it upgraded its derivatives trading systems to J-GATE, which was modeled after the NASDAQ OMX Group's CLICK XT trading system used by the OSE. At the time, J-GATE was at the cutting edge of global standards in terms of trading functionality and order processing capacity. Proactive adoption of such global systems is a hallmark of Japanese market infrastructure providers.

The exchanges were the first Japanese market infrastructure providers to migrate to round-the-clock trading and settlement, though others such as the Japanese Banks' Payment Clearing Network and BOJ-NET are preparing to follow suit. Initially, Japanese futures and option markets' trading hours were roughly identical to cash market trading hours, but they have since been extended repeatedly. With night session trading hours currently extending until 3:00am, Japanese futures and options markets are open roughly 19 hours a day in the aim of being global markets.

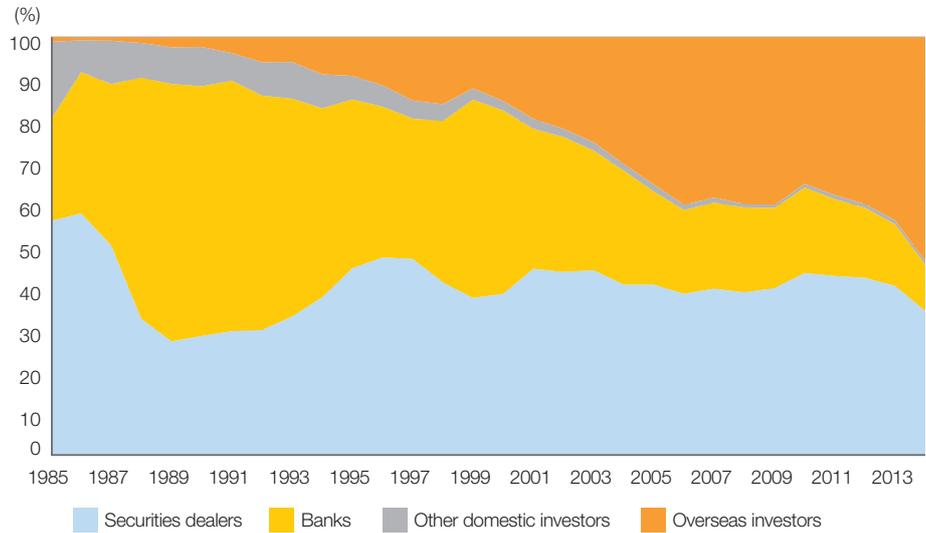
In terms of high-speed trade execution services in futures and option markets, the JPX Group provides co-location services, mainly to proprietary high-frequency traders and market participants that execute trades on behalf of clients (particularly overseas investors). By installing hardware loaded with trade execution programs at the TSE's primary site, market participants can minimize their distance from TSE trading systems and quotation systems and shorten quote and order transmission times to microseconds.

Big increase in overseas investors' share of JGB futures trading

According to the most recent data available, overseas investors' share of JGB futures trading is over 50%, up from below 20% in 2000 (Exhibit 1). Overseas investors' growing share of the JGB futures market is likely attributable to various factors, but Japanese exchanges' initiatives aimed at becoming global markets, such as the infrastructure upgrades discussed above, have presumably helped to drive this trend.

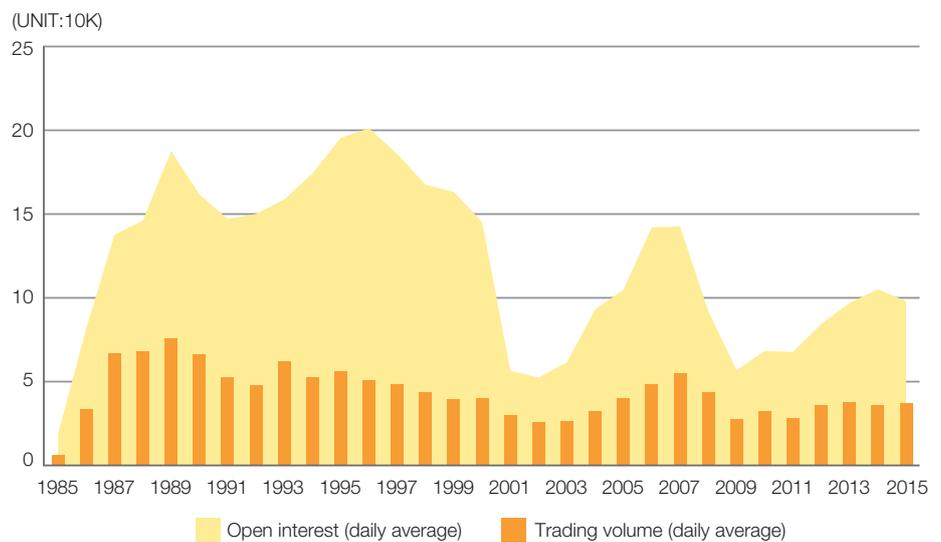
Meanwhile, long-term JGB futures' trading volume has been roughly flat for nearly 20 years. With volatility in interest rates and bond yields nearly nonexistent across all maturities, demand for long-term JGB futures from dealers and as a hedging instrument has apparently dwindled. However, in the US, where short-term interest

Exhibit 1: Shares of JGB futures trading volume by investor category



Source: NRI, based on JPX Group data

Exhibit 2: Long-term JGB futures trading volume and open interest



Source: NRI, based on JPX Group data

rates are likewise near 0%, the annual trading volume of 10-year US Treasury futures, the main bond futures product of the Chicago Mercantile Exchange (CME), the world's largest financial futures exchange, is some 340 million contracts, roughly 40 times more than the 8 million 10-year JGB futures contracts traded annually on the Osaka Exchange, although the latter trade in larger units (¥100 million/contract) than the former (\$100,000/contract).

Ongoing efforts to upgrade trading systems

One of the strategic priorities in the JPX Group's medium-term management plan is to expand its derivatives markets. As a key infrastructural initiative toward this end, the Osaka Exchange plans to commission a new derivatives trading system (next-generation J-GATE) in mid-2016. The system upgrade is slated to coincide with various changes in trading practices and new product launches, including extension of the night session by 2.5 hours (from 3:00 to 5:30am). The next-generation J-GATE system will enable trading for roughly 21 hours per trading day.

Overseas investors reportedly account for over 60% of trading in cash equities listed on the TSE's First Section. To expand its derivatives markets, the JPX Group must continue to cater to overseas investors by placing priority on globalization. Additionally, it should further revise trading practices as an exchange infrastructure provider to facilitate greater utilization of JGB derivatives by domestic investors (particularly banks and other institutional investors).

about NRI

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Inquiries to : Financial IT Marketing Department
Nomura Research Institute, Ltd.
Marunouchi Kitaguchi Bldg.
1-6-5 Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
E-mail : kyara@nri.co.jp

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