

Nomura Research Institute, Ltd.

FPL Japan Electronic Trading Conference Lecture Materials

Changing Stock Market Regulations and Japanese Issues

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Evolving Securities Trading Systems

- The world's securities trading systems have undergone dramatic change during the past 10 years.
 - Two key trends that stand out are the acceleration of order processing and the diversification of trading systems.
 - Acceleration: From measuring trade execution in seconds to milliseconds
 - Diversification: From auctions at exchanges to a multiplicity of order execution methods
- Behind these developments are (1) the availability of increasingly sophisticated and low-cost computer systems, (2) increasingly intense competition among exchanges and PTSs and (3) regulatory reform designed to promote competition.
- There has also been an increase of awareness among asset managers of the obligation of best execution being part of their larger fiduciary responsibility to investors.
 - Investors are increasingly paying attention to firms' order execution capabilities in addition to more superficial factors such as fee structures and research and other services when they select brokerages.

Changing Structure of Stock Markets in the United States

- Electronic communications networks (ECNs) increase their share of transactions following the adoption of the Order-handling Rules in 1996.
- The New York Stock Exchange (NYSE), NASDAQ, and other exchanges respond by bolstering their electronic transaction services and adopting more aggressive business strategies.
- Taking advantage of the promulgation of Regulation NMS (National Market System) in 2005, the NYSE reorganizes as a publicly traded company and acquires an ECN. NASDAQ subsequently acquires its own ECN to compete.
- Algorithmic trading (more recently known as high-frequency trading, or HFT), which uses smaller order sizes to avoid market impact and conducts arbitrage between multiple order execution venues, develops.
- Shares listed on the NYSE and NASDAQ come to be traded on more than 40 "markets," and the principal markets' share of all transactions declines to about 30%.

Market Fragmentation or Diversification

- A decline in the market's ability to carry out its role of facilitating price discovery caused by the dispersion of order execution venues (i.e., market fragmentation) has been supposed as an adverse effect of market competition.
- To prevent this effect from occurring, it is necessary to assure best execution by ensuring transparency for price information and speedy routing of orders among markets.
- In the United States, best execution has been assured by using computer networks to implement high-speed trading and routing of orders and by pursuing an open, transparent trading environment through Regulation ATS (Alternative Trading System) and ECN rules.
 - However, the recent decline in the NYSE transaction share is seen as problematic.
 - Some have pointed to the creation of "dark pools" consisting of in-house crossing networks as contributing to market fragmentation.
 - Behind the use of these dark pools is the need to avoid the market impacts of large orders

Changes in Europe

- U.S.-style market competition fails to take hold in Europe, even into the 1990s.
 - TRADEPOINT is established in 1995 to compete with the London Stock Exchange (LSE) but fails to gain the support of institutional investors.
 - Market competition takes the form of competition to open new markets for venture companies, but the deflation of the dot-com bubble sets these efforts back. The German Neuer Markt closes in 2003.
- The EU Markets in Financial Instruments Directive (MiFID) enters into force in November 2007, creating an opportunity for major change.
 - Electronic trading systems similar to exchanges (known in Europe as multilateral trading facilities, or MTFs) and a matching system for brokerages enable activities transcending national borders.
- New European electronic trading systems and the entry of U.S. companies into the market have combined to make intense competition for buy and sell orders a reality.

May 6 Flash Crash

On May 6, 2010, stock prices in the U.S. fluctuated wildly.

- By 2 pm, the Dow Jones Industrial Average (DJIA) had fallen 161 points from the previous day's close of 10868.12.
- The decline began to pick up momentum starting at 2:30 pm.
- Between 2:42 and 2:47 pm, the DJIA plummeted 573.27 points (5.49%).
- The intraday low was 9,872.57 (down 995.55 points from the previous day's close, surpassing the Lehman Shock to become the largest single-day decline ever).
- Starting at 2:47 pm, the average rose 543 points over the course of one and a half minutes, eventually closing at 10,520.32 (at 4:00 pm).
- Of the orders executed from 2:40 to 3:00 pm, 20,761 orders involving 326 stocks that differed from the price (or best indicative price) as of 2:40 by more than 60% were canceled.
- Stock market officials had noted with pride that the market continued to function even during the financial crisis, but the Flash Crash triggered an erosion of trust.

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What Caused These Wild Fluctuations?

- An early theory that an erroneous order triggered the crash has been generally discounted.
- The E-mini, an S&P 500 stock market index futures contract, led the decline.
- When individual share prices fell from 1% to 3% within 30 seconds, ECN trade execution was halted for those shares, and the NYSE's liquidity replenishment point (LRP) system, which transitions to trading floor execution, kicked in.
- Electronic traders unable to connect to the trading floor found themselves unable to place orders.
 - Some observers have also pointed out traders other than those conducting electronic trades stopped placing orders upon seeing the market's wild fluctuations.
- Numerous sell orders were transferred to NASDAQ and other markets and automatically executed.
- Automatic execution with stub quotes offered by market makers accelerated the decline.
 - There was also a considerable volume of short orders targeting extremely low bids.
- Programs designed to automatically cut losses when prices fall below a certain threshold may have contributed to the confusion.
- The price arbitration function for exchange-traded funds (ETFs) and their underlying assets failed to operate properly, resulting in the formation of abnormal prices for ETFs.
- Buy orders flooded the market once traders realized prices had fallen too far, and the market corrected itself.



Preventing a Recurrence

- "Circuit breakers" targeting individual stocks have been introduced.
- Officials are examining stub quote regulations (in an effort to strengthen the obligations of market makers).
- The standard used to trigger transaction cancelation measures has been articulated.
 - Transactions at prices that diverge from the levels at which circuit breakers activate by 3% to 10%, depending on price levels, are canceled.
- Officials are considering new regulations to articulate terms of use and required qualifications concerning colocation with exchange systems.
- Short orders targeting extremely low bids can be prevented by means of new short order regulations enacted in November (under the new rules, only short orders at prices in excess of the national best bid are recognized when prices are declining sharply).
- Market order regulations may also be examined.
 - Private investors who placed stop sell orders suffered dramatic losses from the Flash Crash.

New Circuit Breaker System

	Time of occurrence	Duration of halt in trading
Dow Industrial Average falls 10%	Before 2:00 pm	1 hour
	From 2:00 pm to 2:30 pm	30 minutes
	After 2:30 pm	No halt
Dow Industrial Average falls 20%	Before 1:00 pm	2 hours
	From 1:00 pm to 2:00 pm	1 hour
	After 2:00 pm	All trading is halted for day
Dow Industrial Average falls 30%	Trading is halted regardless of time	
S&P 500 share falls 10% in 5 minutes	If the decline occurs from 9:45 am to 3:35 pm, trading in the share in question is halted for 5 minutes.	

- The circuit breaker system was introduced in the wake of Black Monday to halt all trading in the market when the stock index declines sharply.
- The system was triggered for the first time in October 1997 (when the market fell 554 points, or 7.2%), spurring criticism that there wasn't sufficient chaos in the market to justify the intervention.
- The 10% rule was adopted in February 1998.
- Under new rules, trading is also halted for individual shares when their prices decline sharply.
- On June 30, it was proposed to expand the system to include shares comprising the Russell 1000 Index.
- The system differs from Japan's price fluctuation limits in that it is designed to halt trading temporarily to give investors a chance to cool off.

Current Japanese Rules

- Revisions to what was at the time known as the Securities Exchange Act in Japan in 1998 resulted in the abandonment of the principle of centralized exchanges and opened up the possibility of establishing electronic trading systems (known in Japan as proprietary trading systems, or PTSs).
- Legal changes in 2004 recognized PTS use of the auction system and enshrined in law the obligation of best execution.
- However, the changes have not produced the intended diversification of order execution venues or competition among market operators due to the fact that (1) most PTSs began as services for private investors; (2) the Tokyo Stock Exchange, where most trading occurs, already supports electronic trading; and (3) the obligation of best execution is a formality, and operator awareness remains inadequate.
- The January 2010 launch of the Arrowhead system brought the Tokyo Stock Exchange into the age of high-speed trading, but conditions in Japan differ significantly from those in the United States.
- Price fluctuation limits for individual shares make a Japanese Flash Crash impossible, but there are constraints on price formation.

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(Reference) PTS Slow Start



Future Issues to Examine

- Is the diversification of the trading market increasing or decreasing overall market efficiency?
 - Is the obligation of best execution helping assure market consistency or driving centralization in a single market?
- Is the trend toward high-speed, automated trading increasing market liquidity, or is the associated disadvantage of illogical, automatic execution too great?
 - Some U.S. observers have criticized the move toward increasingly sophisticated trading systems for placing small investors who do not have the resources needed to maintain the necessary systems at a disadvantage.
 - Criticism of flash trading during the summer of 2009 has led to criticism of high-speed trading based on a significant misconception of what actually transpired.
 - In Japan, the need to increase awareness of best execution and to increase market liquidity are pressing issues.

(Reference) Flash Trading Issues

Flash trading takes advantage of a loophole in rules outlining the obligation of pre-trade transparency to present indicative prices to participants in a company's in-house market for a period of 30 ms, after which orders are sent to other markets if no trades have been executed.



Source: Tokyo Stock Exchange materials (altered for explanatory purposes)

- The SEC has prohibited this order processing method since it raises the possibility that orders from other markets that display best indicative prices will be neglected.
- Associated problems do not apply to Japan, where order execution for stock trades is largely limited to the Tokyo Stock Exchange, and where there is no obligation to send orders to venues that display best indicative prices.