

Market Microstructures of SET, TSE and NYSE

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Market Structures do differ. The fundamental types of exchange trading system for Security Exchange of Thailand (SET), Tokyo Stock Exchange (TSE) and New York Stock Exchange (NYSE) are summarized as of the year 1991 as follows :

1. Stock Exchange of Thailand (SET) :

1.1 Brief History : The first equity market in Thailand, named as Bangkok Stock Exchange (BSE) was instituted in July 1962 by private initiative in the form of limited partnership. Because the lack of government support, the ignorance among investor and business institution, the BSE ceased its operation in the early of 1970's [see details Robbins 1969 and Pitiyavit 1991] Following the Second National Economics and Social Development Plan, the new Security

Exchange of Thailand (SET) legislation was enacted in May 1974 and the first official transaction was commenced on April 30, 1975. It has grown rapidly from an annual trading volume of USD 1.2 billion in 1980 to an annual trading volume of USD 30 billion in 1991 with volume increasing at annual rate of around 46 percent over this time period. As of 31 July 1994, over 400 stocks and less than 15 warrants are listed with total market capitalization of about 3.5 trillion baht (or 141 billion USD) in contrast to very thin and inactive bond and preferred stock markets.

1.2 Market Efficiency and Its Characters : The SET's characteristics had often been described as illiquid and inefficient market prone with manipulation and inside trading, particularly during 1980's [see discussions Phagaphasvivat

and Pithyachariyakul 1985, Sareewiwathana and Malone 1985, Sareewiwathana and Isbell 1985, Prasithlamka 1983] Despite of some recent encouraging researches [eg Khanthavit 1990 and 1991, Sahasakul et al 1991, Dayananda and Fagg 1993 and Urathamakul et al 1994] indicating the improvement in SET's market efficiency during 1990's, the recent surveys by World Economic forum 1993 and Hoontrakul et al 1992 and 1993 still reveal the rampant manipulation and inside trading activities in SET.

1.3 Brokerage Member and Fees : As of December 1992, the SET had 40 members which are exclusively allowed to trade on the SET. Each member must pay an admission fee of two million baht to the SET, but the brokerage seat recently has been auctioned at the record high of 300 million baht (about 12 million US Dollars) in 1992. Five seats would be added at the cost about 200 million baht or (about 8 million US Dollars) in 1994 and ten more seats are anticipated in 1995. The brokerage fees have been fixed specifically for 0.5 pct of value traded for common and preferred stock and for 0.3 pct of value traded for unit trust. Licensed management company and sub brokerages are allowed to be charged at lower rate, 0.3 pct of value traded for all transactions.

1.4 Trading Mechanism : historically, transactions have been among brokers by open outcry with bid and asked prices posted on trading boards. Like NYSE and TSE, an auction call market system is used for opening trades while a continuous market system is used for the remaining activity during a trading period. Since unlike NYSE, SET employed no specialist or market maker to maintain orderly and continuous

markets in a security, the trading system is purely order driven auction market system for post-opening trades.

Computerization of trading mechanism on the SET has evolved in stages. First came computerized communication and information in 1986, while the trading boards were still intacted. Subsequently, order flow and confirmations from trading floor to brokerage house are computerized in 1987. In April 1991, the SET introduced a fully computerized trading system called the Automated System of the Stock Exchange of Thailand (ASSET) which replaced the old trading floor. All orders are entered into each member's computer for record keeping and then sent to the SET for computer matching. Similar to the previous system, the order queuing is arranged according to "first-come, first-served" principle, but the pre-opening order is organized according to the price and time priority with three basic rules of highest volume, closest to the last trade and highest price for tie breaking. All deals matched by the system are considered final and legal. It is well noted that a study on trading mechanisms and return volatility in the SET was done by Shastri et al [1994], while Naidu et al [1994] provided extensive studies in this area for Stock Exchange of Singapore (SES).

Trading hours as well have been advanced in stages. The hours of trading for SET from Monday through Friday were first only for the morning session from 10:00 am to 12:00 pm during 1980's and later is extended to 9:00 am to 12:00 pm on June 1, 1990. The two-session trading were preceded on July 2, 1992. (ie morning session 10:00 am - 12:30 pm and afternoon

session 14:30 – 16:00 pm) By the end of 1994, the afternoon session would be extended for another half hour. Rosita et al [1993] provides a fine study on the impact of extended trading hours on the SET market microstructure.

1.5 Price Limit and Spread : Price may vary considerably during the trading hour, but can not exceed 10 percent of the previous day's close for common stock apart from the prohibit of short selling. Spreads are set according to the market price. The spread are set for 0.10 baht for the price 0–10 baht, for 0.25 baht for the price 10.01 – 50.00, for 0.50 baht for the price 50.00 – 100.00 baht, for 1 baht for the price 101 – 200 baht, for 2 baht for the price 201 – 600 baht, for 6 baht for the price 601 – 1,000 baht, for 10 baht for the price 1,001 – 2,000 baht, for 20 baht for the price 2,001 – 3,000, for 30 baht for the price 3,001 – 4,000 baht and for 40 baht for the price above 4,000 baht. Harris [1991] and hameed and Terry [1994] were known to propose the price resolution hypothesis and price clustering in NYSE and SES respectively. But none is existed for the SET.

1.6 Electronic Board : There are four separate boards in computerized trading system. Trading less than one board lot (100 shares) in Special Board is an odd lot, while Foreign Board is provided for foreign owned shares. Trading over 100 board lots and over 10 million baht per transaction in Big – Lot Board is known as a big lot which required approval of the SET. The regular board or Main board is finally for one board lot or a multiple thereof constitute a trade.

1.7 Clearance and Settlement : Stocks traded on the SET were cleared and settled by a department of the SET. It has operated T+3 rolling

settlement since April 30, 1975. After abolishing paper-based system, SET has introduced payment netting in 1981 and Share Depository Center (SDC) in January 1988 to immobilize share certificates. The SDC's scripless system in clearing and settlement was announced on June 15, 92. In 1993, the SET had spinned off its departments responsible for clearing and settlement, the SDC became corporate entity according to the Security and Exchange Act (SEA), B.E. 2535. Further improvement is suggested by Group of Thirty 1992.

1.8 Regulatory and Tax : The exchange liberalization program according to Article VIII of International Monetary Fund (IMF) has been done by the Bank of Thailand in three different phases : 1st phase on 21st May 1990, 2nd phase on 1st April 1991 and 3rd phase on 1st May 1992. No foreign ownership majority is allowed for all companies. especially for financial institutions, though some waives are possible under very special circumstances. In addition, for both local as well as foreign, Capital Gain tax are subjected to tax free for individual and 15 pct withholding tax for juristic investor. Dividends are subjected to 10 pct withholding tax for all investors. Some stamp duty and tax treaties restrictions are applied. [see details from Asia Pacific handbook 1993]. Moreover, the promulgation of the Securities and Exchange Act (SEA) B.E. 2535, effective on May 16, 1992 has marked a milestone for the recent development in the Thai Capital Market. The Security and Exchange Commission (SEC) was next established as a single regulatory body to supervise all public companies and the SET. The first legal action on share manipulation for the

Bangkok Bank of Commerce (BBC), known as "Sia Song Scandal" as offending the SEA became the first case of its kind in Thai history on November 18, 92. Finally, it is noted that Kiatithanavit [1991] provided some preliminary studies on the liberalization of the exchange's control, whereas Khanthavit and Sungkaew [1993] studied the effect of Thailand's barriers to investment.

2 Tokyo Stock Exchange (TSE) :

2.1 Brief History : The first Japanese stock exchanges and the oldest in Asia were established in Tokyo and Osaka in 1878, modeling after its a century old future exchanges for rice. As Japanese society became more militarized in the 1930's the exchanges were amalgamated into a single, semi-government corporation known as the Japan Securities Exchange in 1943. After World War II, new securities laws were drafted under the supervision of the United States and new exchange was organized in Tokyo in 1949. Subsequently, TSE has accounted for beyond 60 pct. of the total national turnover of stocks. As the result of the remarkable growth of the Japanese economy with the complete liberalization of foreign trade and foreign exchange in 1980, the stock market became the largest stock market in terms of market capitalization in the world in 1987 before crashing dramatically in 1989. As of 31 December 1992, 1,651 domestic and 119 foreign companies were listed with total market capitalization of about 290 trillion yens, while the bond and its warrant made up about one third of the market.

2.2 Market Efficiency and Its Characters : Many studies [eg. Lian and Leng 1994, Park 1994] offer to confirm that similar to NYSE,

Japanese stock market is efficient at least in the weak form. Insider dealing has likewise been addressed in Japanese Law since so-called Toshi Journal scandal in the early 1980's. What distinguishes TSE from other major markets is its relative narrowness in terms of the stock available for trading. Though the number of companies listed on the TSE is very akin to the NYSE, most of the listed companies are cross holding. Formerly known as Zaibatus, the "Keiretus" or the bank-recreated industrial groups represents, for example, the web of interlocking share holding among Japanese companies. [see more details in Rowley 1986, Arai 1990] In fact, one estimated that probably in 1990 the actual cross holding value is about 70 pct and the Japanese private investors are accounted for less than 30 pct. of the outstanding stock investment in TSE. Consequently, the prevalence of the cross-holdings is one reason why takeover bids occurs rarely in Japan.

2.3 Brokerage and Fees : Under the Securities and Exchange Law, only stock corporations licensed by the Ministry of Finance (MoF) can engage in the securities business in Japan. There were more than 200 securities companies in Japan, roughly one half of which are members of TSE in 1989, while only little over 22 foreign brokers were presents. The big four - Nomura, Daiwa, Nikko and Yamaichi - dominate the market heavily during the 1980's. The TSE is claimed to be a "broker-driven" market since the Japanese brokers take the responsibility of making the market according to Rowley 1986. Commission rates for stocks, warrants and subscription rights are charged as a percentage of trading value. For instance, for trading value up to Y1.0 million and

for the above Y1.0 billion are charge 1.150 pct. and 0.075 pct respectively.

2.4 Trading Mechanism : The TSE market is a two-way, continuous auction market where buy and sell orders directly interact with one another in two trading session (ie am sessionn 9:00 - 11:00 and pm session 1:00 - 3:00). The two trading methods are employed : the Itayose, the clearing transaction applied at the opening and Zaraba applied in the subsequent continuous trading. Under the Zaraba method, transactions are consummated on the principles of auctions for price and time as equivalent to an open outcry, while under the Itayose method, all orders reaching the floor before the opening are treated as simultaneous orders for matching. All orders in the TSE, either limit or market, are placed by member broker/dealer firms with only four "Saitori" members who function solely as middlemen between these firms. Saitori members maintain a central order book for each of their "franchise" stocks allocated to the TSE and match orders in accordance with price priority and time precedence. "Saitori" members are neither allow to trade any listed stock for their own account nor accept orders from the investing public. [see more discussion in Arai 1990] In short, the market of the TSE is a pure order driven market or order-book matching system without any help of responsible market-marker in contrary to NYSE. [see more discussion Cohen etal 1986, chapter 2]

Computerization in the TSE has gradually developed for the last four decades. The automation of clearing was accomplished in december 1953; Tokyo Stock Exchange Computation Center, LTD was established in June 1961. Transmission

of sock price information was automated in September 1974 at the TSE. For the purpose of enhancing operational capacity of the trading floor, the TSE put an electronic system called the Floor Order Routing and Exchange System (FORES) into full operation on March 18, 1991 for around 150 most active shares and Computer-assisted Order Routing and Execution System (CORES) into full operation on January 23, 1982 for about 440 inactive stocks. FORES is designed to automate the order routing process, to replace manual order books and to computerize reporting-back and trade confirmation process. Its worth noted that Amihud and Mendelson [1989, 1991] provides an excellent study on the joint effect of the trading mechanism and the time at which transactions take placed on the behavior stock returns using data from TSE.

2.5 Price Limit and Spread : Like SET, the TSE maintains daily price limits for individual stocks to prevent day-to-day wild swings in stock prices. The TSE's daily price limits are set in terms of absolute yen or approximately more or less 20 pct. of the last closing price depending upon the price range of each stock of the purpose of simplicity. In addition, when there is a major order imbalance, the TSE requires the Saitori to indicate a "special bid and/or ask quote". These special quote would be publicly disseminated through the market information system of the TSE, enabling market participants to repond to the imbalance.

2.6 Regulatory and Tax : There are no limitations on the repatriation of capital and earnings under the Foreign Exchange and Foreign Trade Control Law since December 1980. There

is no limit for foreign ownership in "non-strategic" companies. Regarding to tax issues, dividend for foreigners is subjected to 20 pct. with holding tax, but the capital gains tax is exempt for non-resident individual investor with few exceptions. [see Rowley 1986] The security and Exchange Law (SEL), pattern after the 1933 Securities Act and 1934 Securities Exchange Act of the United States, was enacted in 1947. In May 1948, the Security Exchange Commission, patterned after the U.S. system was established as an independent organization of the Ministry of Finance having the character of an administrative commission. In 1986, Law for Regulating Securities Investment Advisory Business is enacted to insure fair practice of securities investment advisers and to protect investors by regulating investment advisory business. Moreover, the TSE conducts strict examinations of the periodic reports submitted in accordance with the provision of the SEL.

2.7 Clearance and Settlement : On the TSE, almost all of the stock tradings are settled on the third business day following the day of transactions (T+3). The clearing and settlement procedure for stock trading involves trade comparisons, trade netting, settlement by book-entry and money settlement. While as per illustration 2d, settlement by book-entry and subsequent delivery are done through the Japan Securities Clearing Corporation (JSCC), a TSE's subsidiary established in 1973, the money settlement is effected through the Exchange. Later on the Japan Securities Deposit Center (JASDEC) organized by Ministry of Justice and Finance was found in December 1984. There are two separate systems : Fund Information Relay System (FIRST) since

April 1989 and Instruction Matching System for Non-Residents since December 1991. Finally, the recommendations for further improvement for the clearance and settlement are provided by the Group of Thirty [1992].

3. New York Stock Exchange (NYSE) :

3.1 Brief History : The NYSE was found on May 17, 1792 by 24 stockbrokers and merchants who signed the agreement known as the "Buttonwood Agreement" But the name of New York Stock Exchange was not adopted until January 29, 1863. The first stock market crash caused by gold speculation was on September 24, 1869 and the most recent dramatic one was "Black Monday" on October 19, 1987. In short, the exchange has gone through boom, bust, war, recession, and growth--and into today's technological market. As of December 1992, apart from operating the largest centralized bond market in the world for close to 2,400 government and corporate bonds, NYSE's total market capitalization value for equity was USD 4.04 trillion. About 51 million Americans directly own NYSE-listed stocks or mutual fund shares, while over 10,000 institutions invest at least USD 5.0 trillion in the NYSE. More than 2,080 companies from around the world list their shares on the NYSE. Whereas program trading volume accounted for approximately 11.5 pct. of total NYSE volume, average daily volume is about 202.3 million shares or about USD 7.3 billion.

3.2 Market Efficiency and Its Character : Most evidences [e.g. Fama and Blume 1966, Fama 1970, Scholes 1972, Black 1973, Jaffe 1974, Dodd 1981, Elton et al 1991], suggests that capital market are efficient in their weak and

semistrong forms, that security price conform to a fair-game model but not precisely to a unfathomable random walk because of small first-order dependencies in prices and non stationary in the underlying price distribution over time, and that the strong-form hypothesis does not hold. [see more discussion Copeland and Weston 1992, Chapter 11] Bollerslev and Hodrick [1992] likewise serves a selective recent survey of the voluminous literature on test for market efficiency.

3.3 Brokerage and Fee : At the end of 1992, the NYSE had 1,420 members, including 1,366 members who own "seats" and have full distributive right in the NYSE's net assets. The level of seat prices in cash transfer reach a high of USD 0.6 millions on February 3, 1992. The Fixed commission system is abolished on April 30, 1975 after 50 years of sliding scale of commission rates existence. Consequently, each firm sets its commission rates according to the number and type of services provided. Discount brokers, for instance, ordinarily charge lower rates, since they usually don't provide investment advice, and other services.

3.4 Trading mechanism : Blume and Siegel [1992] garnered an excellent survey of the evolving literature on the asset pricing of assets and the structure of financial markets with an appendix for the description of world equity markets structure. The paper started off that the trading mechanism and procedure in NYSE has developed for nearly two hundred years and is very complex in nature. The first tickers was introduced in 1867 and the first transmission of trade and quote data from floor were fully automated on December 20, 1966. The trading hours had changed to 9:30 am. -

4:00 pm. since September 30, 1985. As of December 1989, trading data for NYSE companies is available on over 200,000 screen terminals in 55 countries around the world.

At the opening, the NYSE operates as a batch market where buying and selling interests are matched at a common price. The specialist, analogous to air traffic controller, has the responsibility for setting an opening price at which all trades either buy or sell will be executed. In setting this price, the specialist will take into account public market orders to buy or sell at the open, previously submitted limit, stop, and specialiged order, interest in the crown, and finally his own inventory position. Since the specialist may or may not provide information about the volume of roders as well as a likely opening price to NYSE members on the floor of the exchange, the opening on the NYSE has characteristics of both a sealed and an unsealed batch process. After the opening, the NYSE normally operate as a continuous market with feature of both an auction and a dealer market. Since the specialists are granted the position of a monopolistic dealer, the NYSE has the principle affirmative obligation of the specialist to smooth prices and facilitate the execute of public order in the case of a temporary order imbalance, to act as a catalyst to bring buyers and sellers together, to serve as an auctioneer, and to manage the book. In response to the market breaks in October 1987 and October 1989, the NYSE instituted several circuit breakers to reduce market volatility. For instance, in the event of the Dow Jone Industrial Average (DJIA) falling more than 50, 250, and 400 points from the previous day's close, trading in all stocks in

halted for a tick test, one hour, two hours respectively. (see more details in NYSE Fact book 1992)

A physical spiral notebook which a specialist was used is now replaced with a computer screen, although specialized orders are still recorded manually. Also, instead of hand calculation, nowadays Opening Automated Report Service (OARS), an electronic system integrated with the electronic book, facilitates the matching process by calculating the imbalance of market-at-the-open-orders. There are two ways to transmit an order to the specialist post. First is for the broker to call a clerk on the edge of the floor of the exchange who in turn gives the order to a floor trader who walks the order to the specialist. The second is for the broker to transmit the order electronically to the specialist post by SuperDot computer system which expediting the transmission of the order to the specialist and the confirmation of the execution back to the broker. However, institutional investors often use the "upstairs" market to discreetly match a large order with orders from other investors, or against a broker's own account as a principal. Blume et al [1989] and Kleidon and Whaley provided some of the studies on market microstructure breakdown in the NYSE during "Black Monday", whereas Reinganum [1990] and Stoll and Whaley [1990] are among fine studies on the NYSE market structure.

3.5 Price Limit and Spread : There is no ceiling or floor price limit for any security traded in NYSE and short selling is allowed. Total of 3.9 billion shares has been short sold in which 39.8 pct. done by specialist to maintain market order, 30.2 pct. done by other NYSE members and the

remainder done by the public. Most stocks listed in NYSE trade at multiple of an eighth of a dollar. It worths note that price clustering has been long examined, for example, by Neiderhoffer [1965] and Harris [1991].

3.6 Regulatory and Tax : The Securities and Exchange Commission (SEC), an independent agency, was found in 1934 to administer the federal securities legislation introduced in 1933 and 1934 after the Wall Street Crash of 1929. The SEC has four principal operating divisions of : a) corporation finance, b) market regulation, C) investment management and d) enforcement. In November 1988, the SEC published a Policy Statement on the regulation as the features of efficient market structure, sound disclosure systems and fair and honest markets. Also, the NYSE was incorporated on February 18, 1971 with board members now expanded to 12 public members and 12 industry members. Finally, tax treatment is the same for both local and foreigner.

3.7 Clearance and Settlement : The stock clearing corporation was first established on April 26, 1920. National Securities Clearing Corporation (NSCC) formed in 1976 to consolidate the clearing operation among major US exchanges including NYSE is later the nation's leading provider of post trade clearance and settlement services. NSCC also provide guarantee the financial settle of transaction as a central function by the mean of establishing Clearing Fund and coordinating efforts with market place regulators. The NYSE implemented a new rule requiring Trade Date + 1 (T+1) completion of transaction on the NYSE on August 6, 1990. (see more details from NSCC manual)

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