Exchanges' Trading Systems in Connection with Direct Market Access – CE3's Case Study[#]

Pavel ŽILÁK[*]

1 Preface – CE3 Exchanges profile

As the stock markets have been changing and developing in the course of time, so should exchange´s trade systems and broker´s solution for market accession that means of increasing profitability and efficiency to achieve the most liquid and transparent stock market for investors and issuers. In the last year and months was appeared specific type of accession to the CE3 (3 Central and Eastern European countries – Czech Republic, Hungary and Poland) Exchanges which signifies that placed clients orders can be processed instantly without human intervention directly at the exchange.

1.1 Basic market facts

The Warsaw Stock Exchange is the largest stock exchange in CE3 region. It operates in Poland. The Warsaw Stock Exchange came into existence in its present form on 1991 and it is based as other CE3 Exchanges on membership principle[1]. Warsaw is home to the largest and liveliest stock market in the region. A market correction in the first months of 2007 offered foreign investors an entry point to this dynamic market.

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[*] Ing. Pavel Žilák – Ph.D. student; Department of Banking and Insurance, Faculty of Finance and Accounting, University of Economics, Prague, W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic; <pavel@zilak.cz>.

[1] Membership principle means that only licensed securities dealers and brokers who are members of the Exchange have access to the Exchange's system and are entitled to make trades.

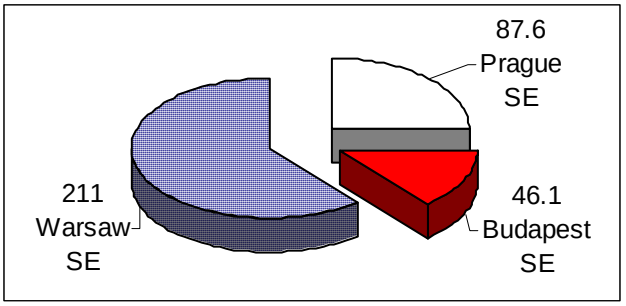
The Prague Stock Exchange is the biggest organizer of the equities, bonds and other securities market in the Czech Republic. PSE began trading activity in 1993.

The Budapest Stock Exchange is the key organizer on the Hungarian stock market. It is essential to the financial services structure, because it represents an alternative financing source to commercial banks for the organisations. In addition, the scope of investment opportunities is thus broadened for both domestic and foreign investors, regardless of whether they are private or institutional.

1.2 Market capitalization

In comparison with other Exchanges, WSE is the biggest stock market according to market capitalization with $211 bln., followed by Prague and Budapest. Increasing of the market capitalization is narowly connected with IPO (Initial Public Offerings) activities. Most Polish entrepreneurs aspire to a public share listing on the exchange. WSE is known with unbeatable number of IPOs. The smaller bourses of the Czech Republic and Hungary are expected to see an increase in IPO activity as well, either through privatizations or listings of private firms as they reach an appropriate size. Higher market valuations reflect high growth expectations for the region.

Fig. 1: CE3 market capitalization in bln. USD as at the end of January 2008



Source: Own data processing based on PSE (2008), WSE (2008), BSE (2008b).

In Figure 1 with 25.4% share of total CE3 market capitalization is Czech Republic in the second place and finally third Hungarian Stock Market with 13.37%.

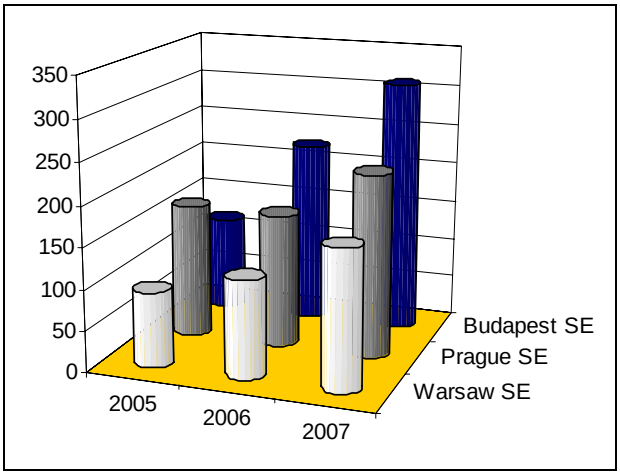
There are over 100 companies on the three markets whose market capitalisations exceed $100 million. The biggest is the Czech power utility CEZ, which intends to make several acquisitions elsewhere in the region and has become Europe's second biggest electricity exporter.

1.3 Daily turnovers

Daily turnover in the CE3 markets has grown significantly over the last few years to approximately $300 million in Warsaw, $220 million in Prague and above $170 million in Budapest in 2007. On the three main regional markets, equity trades are executed solely via the stock exchange.

A number of companies listed abroad, but active mainly in Central Europe, have elected for a dual listing of their shares on one of the regional markets to attract the interest of regional investors. French real estate developer Orco, artificial textile maker Pegas and US TV broadcaster CME, for instance, are both listed on the Prague Stock Exchange and have benefited from significant local interest and pension fund inflows as a result. For the same reasons the Czech power utility CEZ debuted on the Warsaw Stock Exchange with its own dual listing last year. Fig. 2 reflects growth of daily volumes in three regional Exchanges.

Fig. 2: Growth of daily volumes in CE3 Stock Markets in mil. USD



Source: Own data processing based on World Federations of Exchanges (2008).

2 Direct Market Access through Financial Information Exchange Protocol

2.1 Introducing DMA through FIX

In the past brokers placed client orders solely as care or manual orders. Experienced staff has to execute orders for clients and afterwards has to send reports and confirmations back to clients. Nowadays brokers begin to recognize the importance of providing Direct Market Access[2] to its clients, allowing them to enjoy all the advantages of real-time trading. They have built own trading platform using the FIX Protocol (2008) which they believe to be the messaging standard for the future. In the Tab. 1 there is summarized what is done with order after coming to their systems.

Tab. 1: FIX order entry to the broker

- once an order comes to brokers system, it appears in trading terminal and waits for trader's acknowledgement / this is all just a single click,
- trader is able to work the order immediately,
- anytime a fill occurs, it is instantly reported to the client automatically without any intervention,
- at the end of the day, book-outs and confirmation files are generated by the system confirmations/reconciliation files are being sent semi-automatically.

Source: Own processing based on author's experience

Brokers generally are currently set up to routinely process messages of FIX protocol version 4.1. However, FIX engine is capable of communicating in any FIX version up to 4.4. which is the newest one. A version-independent solution is being prepared for release sometimes in this year.

One of the Czech brokers FIX solution now offers direct market access to Prague, Budapest, Warsaw. For these four markets, client's

[2] Placed orders can be processed instantly without human intervention directly at the exchange.

orders can be processed instantly without human intervention directly at the exchange.

Tab. 2: Main advantages of receiving orders electronically

- for the broker:
  - less manual work for traders,
  - firm identification of clients orders in brokers systems,
  - automatic book-outs,
  - very resistant to typos and that sort of problems,
  - ability to process larger volumes of orders,
- for the client:
  - better execution – traders are not disturbed by the administrative tasks,
  - immediate updates – impossible forget to update the client whole process is more reliable, therefore the client receives better service

Source: Own data processing based on authors experience

In the case for orders where does not exist brokers direct market access yet, orders arriving electronically are accepted by brokers electronic desk, processed the traditional way by experienced staff, and reported back via electronic means. The same is applied complex and special requirements in aforementioned four markets for situations where Direct Market Access may not suit.

2.2 FIX Connectivity

The Financial Information eXchange Protocol is a messaging standard developed specifically for the real-time electronic exchange of securities transactions. FIX is a public-domain specification owned and maintained by FIX Protocol, Ltd.

FIX is changing the face of the global financial services sector, as firms use the protocol to transact in an electronic, transparent, cost efficient and timely manner. FIX is open and free, but it is not software. Rather, FIX is a specification around which software developers can create commercial or open-source software, as they see fit. As the market's leading trade-communications protocol, FIX is integral to many

order management and trading systems. Yet, its power is unobtrusive, as users of these systems can benefit from FIX without knowing the language itself. Mission of the FIX Protocol, Ltd. (FPL) is to improve the global trading process by defining, managing, and promoting an open protocol for real-time, electronic communication between industry participants, while complementing industry standards.

FIX began as a collaborative process between Fidelity Management & Research and Salomon Brothers equity trading departments. The firms sought to create an electronic communication protocol to improve order routing and trade processing between counter-parties and exchanges.

Over the years the financial community has witnessed FIX Protocol grow as a technology and as an organization. In order to facilitate growth and prepare for the future, FPL entered into several Statements of Understanding (SoU) with other industry organizations as SWIFT and Bond Market Organizations are.

The future of FIX will continue to satisfy its member's needs and requirements as evidence by increased support for products such as fixed income, futures and derivatives. FIX will also continue the increased support for full trade life cycle processes such as allocations, confirmations, and execution reporting.

From the connection point-to-point of view, it is suggested using the Internet. Brokers can set up VPN (Virtual Private Network) over Internet to build a quick and simple DMA connection for their clients.

Alternatively, if clients networking policy does not allow using Internet for sensitive business traffic, it is possible to connect clients over TNS (Transaction Network Services, providing secure pure-IP network) network.

Brokers can also connect to major hub-and-spoke solutions and/or order routing services[3]. Further, if clients use GL-Trade or Fidessa applications for order management and trading, clients can connect to brokers through their networks[4].

[3] Bloomberg order routing, Thomson AutEx, TradeWare, Reuters order routing.
[4] GL Net, Fidessa Royal Blue.

3 CE3 Brokers Trade Executions concerning Trading Systems

3.1 Prague DMA specifics

The PSE is a fully-electronic exchange, it has no trading floor and trading is based on automated processing of its members orders and instructions for the purchase and sale of securities. Only members are allowed to trade on PSE.

PSE system is unique in combining both Quote[5] and Order[6] driven trading systems (Musílek, 2002) at the same time. As a result, for nine blue chips which attract 90% of order flow, there are two prices/market depths available at the same time however arbitrageurs keep prices very closely correlated in both sub-systems. The Quote driven system is much more liquid compared to the Order driven system. Only round lots are traded in Quote driven system.

In general, PSE members send electronic buy or sell instructions to PSE and if conditions for matching opposite instructions within the above sub-systems are met, a trade gets immediately recorded. Trading in SPAD is based on the obligation of the individual market makers to continually quote purchase and sale prices of the issues for which they act as market makers.

A market maker is a PSE member who supports trading in assigned securities traded in SPAD, and thus increases liquidity of the securities within SPAD. For each security in SPAD, there has to be a minimum of three market makers quoting prices. Each market maker is required to quote a buy- and a sell-price at all times during Open Trading Session for a standardized number of shares to be delivered on a T+3 basis, in a selection of securities the market maker chose to quote. The PSE Trading Committee also sets a maximum bid-offer spread for quotes on each instrument to bring prices of purchases and sales closer in a competitive manner.

Technically, all quotes of all market makers take form of an open instruction to buy or sell a standardized round lot quantity of shares. The

[5] SPAD – Stock Market Support System based on the activity of market makers.
[6] Automatic Trades – KOBOS (Continuous Regime) and Auction Regime.

quotes sent to PSE are immediately displayed via electronic means to other PSE members, while any member can immediately hit the best bid or take the best offer quote displayed within SPAD, such an action resulting into instructions being matched and a trade being immediately recorded and published. For avoidance of doubt – all trading is done always in round-lot sizes.

Automatic trades occur in an order-driven system in which trades are concluded on the basis of matching orders for the purchase and sale of securities in a PSE order book, as entered via electronic means into relevant PSE sub-system by member firms. Matching of orders takes place under two regimes: the auction regime[7], followed immediately by the continuous regime[8].

As I described in the past (Žilák, 2008) at the Prague stock exchange, there are two submarkets: a liquid quote-driven full-lot-only submarket called SPAD, and somewhat less liquid order-driven odd-lot submarket called KOBOS. Default brokers algorithm for DMA orders is such that a newly arrived order is first tried in SPAD, and only the unexecuted balance is sent to KOBOS where it waits in the anonymous order book for execution. Thus, brokers are increasing the successful fill rate of client's orders. For example it is in the Tab. 3 explained how you clients can direct their orders just to one of the submarkets.

Tab. 3: Possibility of direction clients orders in SPAD submarket

SPAD submarket			
Bid qty	**Bid price**	**Ask qty**	**Ask price**
5	799.5	5	800.0
5	799.0	15	800.5
15	798.0	10	801.0

Source: Own data processing based on author's experience

Although some exchange members support both Market and Limit order types, they do not recommend using Market orders in Prague for DMA if you wish to use the default algorithm described above. The

[7] With the price priority queuing.
[8] Queue priority – price first, then order entry time.

reason is that on certain conditions, your order might get filled not exactly the way you would expect at first sight. Assume following market depths.

Tab. 4: Possibility of direction clients orders in KOBOS submarket

KOBOS submarket			
Bid qty	**Bid price**	**Ask qty**	**Ask price**
3	801.5	10	803.5
600	801.0	70	805.0
231	799.5	231	808.5
930	797.0	1 250	809.5
1 534	796.0	129	811.5
3 745	795.5	1 443	813.5
318	790.0	2 907	814.0
2 147	785.5	6 958	816.5

Source: Own data processing based on author‘s experience

If client sends a buy of 15 000 at market, it can sometimes happen that client would only be able to lift the best offer 5 000 at 800.0 in SPAD submarket, while the rest of 10 000 shares would be sent and executed in KOBOS; therefore, clients would end up with 15 000 shares at average price 809.415 instead of expected 15.000 at 800.333 which clients would have if all gets executed in SPAD.

Therefore, it is recommended using limit orders with slightly broader limits instead of just market orders when trading the default way.

Tab. 5: Key points of brokers Direct Market Access solution in Prague Stock Exchange

1) Upon receiving a valid new order, broker check whether the order is big enough to try to process it in SPAD.
2) If yes, then.
   a. Number of round-lot orders eligible for being filled are immediately sent to SPAD in a one-off attempt to také available quotes of the market makers.
      i. Any successful fills are immediately reported as partial fills

ii. Unsuccessful attempts get converted into KOBOS-type orders and sent to KOBOS order queue (the order driven part).

b. Rest of the orders is sent directly to the KOBOS order queue.

3) If not, then the order is sent directly to the KOBOS order-queue.
4) Any fills in KOBOS during the course of the day are reported.
5) At the close of the trading day, all unfilled orders waiting in KOBOS expire and an out message is generated.

Source: Own processing based on author's experience

In rare cases of arbitrage imperfections when KOBOS price stays better than SPAD one for some time, and liquidity in KOBOS is high enough, it is theoretically possible to achieve a marginally better price in KOBOS, should SPAD be circumvented and all orders be sent to KOBOS queue directly. However, brokers believe the benefits of DMA solution currently outweigh this risk by an order of magnitude.

3.2 Warsaw DMA specifics

At Warsaw stock exchange DMA orders sent without any price limit fall into two sub-categories dependent on further qualifiers pertaining to them. First sub-category means orders that assume that trading can take place only if the order can be filled in full. WSE has an appropriate name for such orders – Must Be Filled. Secondly orders that are first sent to the order queue without any price limit, but once partially filled, the unexecuted quantity becomes a limit order at last price.

During order queuing for fixing auctions, an indicative price is calculated on an ongoing basis. In other words, market participants can see a theoretic price calculation and can react to it by submitting new orders.

Warsaw Stock Exchange runs a clone of Euronext system called Warset, which enables its members to conclude transactions in an order-driven system. Instruments traded at WSE are divided into two sub-markets, while more liquid stocks trade in the segment of continuous trading, the less liquid ones enter single-price auction with two auctions per day.

There are two priorities applicable to an existing queue of orders – price and – time of order placement. This means that in a case where there

are two orders of identical price ready for execution, it is the order first entered into the system that gets executed.

The most liquid stocks are traded in the continuous trading system. There is an auction procedure used at the opening and closing of trading, with a period of continuous matching of orders in between.

The opening price is determined in the opening auction. During pre-open period, orders are accepted but transactions are not concluded. However, an indicative opening price is calculated. At the end of the period, a fixing algorithm is run, the opening price is determined and orders entered in the pre-open stage are executed at the fixing price.

To determine the fixing price, the auction follows these rules as maximizing trading volume, minimizing the difference between the buying and the selling volumes that are possible to fulfil at a given price and minimizing the difference between the price being determined and the reference price.

If the opening price cannot be calculated a procedure of market balancing is started. During balancing, investors may place additional buy or sell orders, while orders placed earlier may be cancelled or modified. The session chairperson supervising the trading day has a strong say in this exceptional procedure and can decide on the way forward for the given session.

A Continuous trading period begins afterwards, while buy and sell orders may be placed. When orders enter the Order book and their prices match, trades are executed on an ongoing basis. To avoid random price movement during the final part of a continuous trading session, the day is concluded with yet another auction where the same rules as during opening apply. In the ten-minute post-auction session, all transactions can be executed at the closing price.

Tab. 6: The matrix of orders can be traded in each regime in WSE

WSE Terminology	***Behaviour***	***When the order can be sent***
Order types		
LIMIT ORDER	Order with a price limit attached	Anytime

WSE Terminology	***Behaviour***	***When the order can be sent***
Order types		
MARKET	Orders without any price limit, but once partially filled, the unexecuted quantity becomes a limit order at last price	For continuous trading only
MARKET ON OPENING	The order can get executed at the fixing price, unexecuted part of the order remains in order book with limit price equal to the fixing price	For open and close only, cannot be combined with Minimum size, Hidden size, Stop Loss, Stop Market
STOP LOSS	This order becomes a MUST BE FILLED order and gets sent to the system when the security trades at – or above/below (based on direction) – the stop price	Not for post auction trading
Quantity limitation		
MUST BE FILLED	Orders that assume that trading can take place only if the order can be filled in full	Not for post auction trading
MINIMUM SIZE	Minimum number of shares of an order to be executed	Not for open / close
HIDDEN SIZE	Maximum number of shares within an order to be shown on the exchange at any given time	Anytime
Time limitation		
DAY	The order remains in effect only for the given trading day	Anytime
FILL AND KILL	Immediate or Cancel – an order is to be executed in whole or in part as soon as it is sent to the system; any portion not so executed is to be canceled	Anytime
FILL OR KILL	An order is to be executed in its entirety as soon as it is sent to the system; if not so executed, the order is to be cancelled	Not for open / close

Source: own processing data from WSE (2008).

Tab. 6 outlines order terminology as used by Warsaw Stock Exchange and tries to explain in simple language the expected behaviour of the order. Also, an indication as to whether the order type is eligible for all stages of trading is included.

3.3 Budapest DMA specifics

When a market order is presented to the trading crowd, the BSE system tries to match it immediately in the order book with one or more counter-orders in the opposite direction, while unfilled portions of such market orders get immediately cleared out of the book. On the other hand, such market orders jump in priority queue always to top.

Budapest Stock Exchange operates an electronic system capable of trading equities and fixed income instruments[9]. During opening hours, BSE allows for computerised real-time remote trading, so there is no open outcry trading on floor.

For equities trading in MMTS I, an order-driven system is used where trades are concluded on the basis of matching queued purchase and sale orders in a central order book. Securities listed at BSE are organised into sub-markets[10].

Within equities sub-market, trades are concluded in the order book on the basis of matching purchase and sale orders entered by member firms. Matching of orders is divided into three regimes throughout the course of the business day. First is called opening regime, second continuous regime and third one closing regime.

All orders are queued first by price, then by order entry time, and when matching algorithms calculate trades and prices, the orders get processed in that priority, i.e. if several orders at the same price are queued, the priority is given to the orders placed earlier. The order book can display the market depth without giving away the identity of the member firm submitting an order.

[9] BSE calls this part as MMTS I, or Cash Market, as well as derivatives MMTS II.

[10] Security Boards, e.g. the sub-market for local HUF-denominated equities is called FŐRÉ.

Please look at Tab. 7 where is pointed out what orders can be traded in each regime of BSE. In the next chapters will be analysed types of orders which are connected to specific market access.

Tab. 7: The matrix of what orders can be traded in each regime

Qualified by	*Order name*	*Opening regime*	*Continuous regime*	*Closing regime*
Price	LIMIT ORDER	Yes	Yes	Yes
	MARKET ORDER	No	Yes	No
	STOP LIMIT	No	Yes	No
	STOP MARKET	No	Yes	No
Quantity	ANY	Yes	Yes	Yes
	ALL OR NONE	No	Yes	No
Time	FILL OR KILL	No	Yes	No
	FILL AND KILL	No	Yes	No
	DAY	Yes	Yes	Yes

Source: own processing data from BSE (2008a).

The table below outlines specific limitations that Budapest Stock Exchange in Hungary recognises in orders submitted to BSE systems and it lists corresponding FIX message tags and their combinations that are used by brokers to construe an order accepted by BSE.

Each valid BSE order has three limitation arguments at the same time – price limitation, quantity limitation and time limitation; each of the limitation arguments then picks one of the predefined values within its class as listed in Tab. 7.

4 Types of Orders and Limitations of the CE3 Stock Exchanges

4.1 Type of Orders regarding to DMA

On the stock exchanges you can put the different orders to the Order Book. Since the three DMA-enabled markets differ significantly in their

internal trading mechanics, the table below compares the most important tags in New Orders destined for CZ, HU, and PL.

Tab. 8: Orders types of the CEE Exchanges

Type of order	BSE	WSE	PSE – SPAD
Limit	Yes	Yes	Yes
Market	Yes	Yes	Yes
Stop limit	Yes	Yes	No
Stop market	Yes	No	No
Any	Yes	Yes	Yes
All or none	Yes		No
Fill minimum	Yes	Yes	Yes
Session	Yes		
Fill or kill	Yes	Yes	
Day	Yes	Yes	Yes
Good-till	Yes	Yes	No
Good-till-cancel	Yes	Yes	No

Source: Own processing based on specific broker´s procedures.

Orders could be clasified by price and by quantity. Price orders consist of a few orders as *Limit*, *Market*, *Stop limit* and *Stop market*. *Limit* order may be filled at the Price specified in the order or better. All orders that fail to specify order method shall qualify as *Limit* orders. *Market* order is one entered without specifying. On the BSE orders may only be filled at the best possible Price with orders of the opposite direction existing in the Order Book to form several trades, if necessary.

On the PSE and WSE will this order hit or lift market. Stop limit order is a conditional order which will automatically and without any intervention by the party entering it convert into an Active LIMIT order at the trigger Price of the trade next preceding the entry of the order on the same Exchange Day or – after order entry – at the trigger Price indicated in the order, or higher – on BSE and WSE. The last order clasified by price is Stop market order which is is conditional order that will automatically be triggered as Active and become a Market order without any intervention by the party entering it if the trade immediately

preceding order entry or above the Trigger Price set in the order, not including trades resulting from negotiated deals in Budapest.

Among orders classified by quantity are *Any*, *All-or-none*, *Fill minimum*, *Session*, *Fill or kill*, *Day*, *Good-Till* and *Good-Till-Cancel*. *Any orders* may be filled partially, even by trading units or by matching order quantity in full. All orders leaving order class unspecified shall be treated as *Any* orders. *All-or-none* orders may only be filled by matching order quantity in full, using more than one counteroffer for the purpose, if necessary. *Fill minimum* order may only be filled by matching in full, even through several deals by using several *Counteroffers*, the minimum fill quantity specified therein, which may not be greater than total order quantity.

When a *Fill Minimum* order is filled partially, the order shall be regarded any order in respect of the remaining order quantity. *Session* orders remain valid until the end of the particular trading session. All orders that fail to specify order validity shall qualify as *Session* orders. *Fill or kill* orders are valid at time they are entered. *Fill or kill* orders may not be matched with a *Fill or kill* order made in the opposite direction in BSE. *Day* orders remain valid until the end of the particular Exchange Day. *Good-till* date orders remain valid until the calendar day specified in the order. *Good-till-cancel* orders remain valid until withdrawn.

4.2 Limits and Halts of Trading

If the price of the last trade is more than 10% higher/lower on the BSE then the reference price, trading is suspended in certain exchange product at least 2, and maximum 15 minutes. After a temporary halt the Exchange is not obligated to apply circuit breaker limits on the same day for the same security.

In case of Warsaw Stock Exchange shares could be traded maximum 10% from opening price during the day and finally on the PSE in SPAD regime could be traded maximum 20% from opening price during the day, trading is suspended and on the PSE´s Kobos shares could be traded maximum 5% + 5% + 5% + 5% after that is trading suspend for 5 minutes and then next 10% + 10% + 10%.

Tab. 9 summarizes the details of order processing on the CE3 Exchanges which I tried to analyse aforementioned.

Tab. 9: Comparison of values supported in new order tags for each respective DMA

Field Name	*Values supported for respective DMA*		
	Prague	***Budapest***	***Warsaw***
Handling Instructions	1 = Automated	1 = Automated	1 = Automated
Side	1 = Buy 2 = Sell	1 = Buy 2 = Sell	1 = Buy 2 = Sell
Order Type	2 = Limit[11]	1 = Market 2 = Limit 3 = Stop 4 = Stop Limit	1 = Market[12] 2 = Limit 3 = Stop K = Market with Leftover as Limit O = Opening Price
Price	Mandatory[13]	Mandatory for OrdType = 2, 4	Mandatory for OrdType = 2
Time In Force	0 = Day	0 = Day 3 = Immediate or Cancel 4 = Fill or Kill	0 = Day 3 = Immediate or Cancel 4 = Fill or Kill
Executed Instructions	Not available	G = All or None[14] (HUF 25M or bigger)	G = All or None
StopPx	Not available	For OrdType = 3, 4	For OrdType = 3, 4
MaxFloor	Not available	Not available	Optional[15]
MinQty	Not available	Not available	Optional

Source: Own processing based on specific broker´s procedures PSE (2008), BSE (2008a), WSE (2008).

[11] *For Prague DMA, an order must have limit at all times.*
[12] *For OrdType = Market, ExecInst value AoN is mandatory at all times.*
[13] *Prague DMA orders must have limit at all times.*
[14] *The order book may contain no more than 16 AoN orders at the same time.*
[15] *Minimum value accepted =100.*

Conclusions

One of the important and the very latest trend in which brokers have strong belief and which brokers begin to recognize is the importance of providing direct market access to its clients, allowing them to enjoy all the advantages of real-time trading on the exchange. Brokers have built own trading platform using the financial information exchange protocol which is a series of messaging specifications for the electronic communication of trade-related messages. It has been developed through the collaboration of banks, broker-dealers, exchanges, industry utilities and associations, institutional investors, and information technology providers from around the world. These market participants share a vision of a common, global language for the automated trading of financial instruments.

Relation between Care and DMA Orders on the PSE and other Exchanges similar was at the begining of year 2006 – 90% to 10%, at the end of 2006 – 70% to 30% and brokers further assume that this share of DMA orders exceeds 50% of all executed ordes in 2007. The increasing trend and relevance of Direct Market Acces is evident.

DMA facilitates brokers less manual work for traders, broker's identification of client orders in their systems, automatic book-outs, very resistant to typos and that sort of problems and ability to process larger volumes of orders. For the client this type of accession to the markets means better executions, immediate updates, more reliable process and better service.

In comparison of values supported in new order tags for each respective DMA in a specific broker PSE differs from other two markets by limitation of orders and possibility to acceptance more than one type of order.

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Pavel Žilák

ABSTRACT

Direct market access orders have been growing more rapidly than other ways of accessions (other accessions are supposed to be e.g. by care, worked, manual orders) to the markets recently. This work focuses on state-of-the-art development of the technology called Direct Market Access and demonstrates basic trends in building up of this approach. Analyses of exchanges trade systems and outline of exchange member trade executions on the other hand appear to be two of the key issues of this thesis. The contribution provides relatively complete review of technical aspects of trading on CE3 markets and presents key matters about functionality of trading systems and specific broker direct accession to the local markets.

Key words: Exchange; Stock Market; Broker; Trading System; Direct Market Access; Financial Information Exchange Protocol; CE3; Czech Republic; Hungary; Poland.

JEL classification: G15.