

Market Structures and Statistics

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In recent years, most security markets have experienced fragmentation. Besides traditional stock exchanges, trade could be done on new trading venues or within brokerage firm. In United States, Goldman Sachs, Morgan Stanley or UBS are some of the firms that have developed their own proprietary trading platforms. In Europe, “systemic internalisers”, which are investments firms executing client orders on their own account, are authorized since November 1st 2007. Most often, these new possibilities are offset by strict reporting obligations, for which specialized firms develop new services.

Whether such fragmentation benefits the market remains uncertain. But it obviously complicates trading analysis with an increase in the number of sources, either coming from different trading venues, or from different reporting systems. Analysis suggests that these systems interact. But tools are missing to properly measure this interaction and trading platforms are often analyzed separately from each others. Information provided by reporting system is also separated from information provided by execution venue. However analysis suggests that certain overlap may exist between the two set of data.

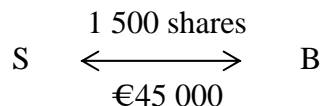
Besides that, technological progresses in trading process (algorithm trading development) have changed the meaning of the most traditional data. It becomes more complex to link raw data of electronic trading, their economic meaning and the end investor needs.

This short article emphasizes the difficulties to comprehend the new situation. In the first part, we show on an easy example that traditional data mirrors the way trading system works and unveils little of the end investor needs. One challenge for analysts is to restore the link between data produced by trading platforms and the economic meaning of the trades achieved by end-investors. In the second part, we show the difficulties to compare data coming from trading platform with those coming from reporting systems.

Trades: what do we measure?

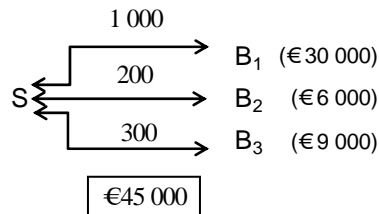
Trade is apparently one of these simple concepts which definition should raise no questions. A buyer meets a seller, once they agree on a price for a good or service, they strike the deal. A trader (S) willing to sell a certain number of shares at some price will conclude the trade once he finds a buyer (B) willing to buy at that price.

For example, let S selling 1500 shares at €30 to B, we could draw following diagram to sum up the trade:



In that case, there is one trade, and the trade size is 45 000 €

Let's suppose that, on computerized trading platform, trader S find an aggregated demand of 5 000 shares at 30 € provided by three traders: B₁, B₂, B₃, for respectively 1 000, 200 and 3 800 shares.

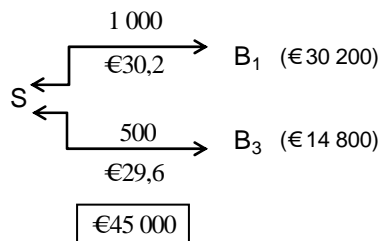


In that case, trade and trade size have different meaning according to seller or buyer. From the seller viewpoint nothing changes: he achieves one trade of 45 000€ Depending on trading rules, he could even not be aware of the number of buyers involved in the trade.

From buyer viewpoint, there are at least 3 three trades, with respective sizes of €30 000, €6 000 and €9 000. And the average trade size is 15 000.

Indeed, how to define the real average size for the market?

In order to show that this situation could be even more ambiguous, let assume that the seller is still willing to sell its 1 500 shares for €45 000, but that there are only 1 000 shares available at €30.2 and 500 at €29.6.



Once again, from the seller viewpoint, the bargain didn't change. He achieved a deal of 1 500 shares for €45 000. But as there are two different prices, one could argue that there are two distinct trades, in order to respect an implicit principle one deal – one price.

Most often the number of trades given by trading venue is the one obtained by adding each match occurring within the trading system. In the three previous examples, a trading platform will respectively publish 1, 3 and 2 trades. This way to count trades mirror the trading rules rather than the economic meaning of the trade. And the trader S would

consider achieving one trade in each case, but recall that in the third case curbing its sells will benefit a better price.

Indeed rather than focusing on the buy side or sell side of previous example, one should emphasize the economic meaning of two different types of orders and appreciate their economic differences. A more accurate distinction is between orders consuming liquidity often called “aggressive orders” and or orders providing liquidity to the market or “passive orders”. Economically, it should not be surprising that transaction costs of demanding immediacy of execution could be significantly higher than the costs incurred in trading patiently.

Some exchanges begin to make this distinction by charging differently these two kinds of orders. But general information provided to the market is still restricted to the usual meaning of computerized matching which is lacking that distinction.

Prices discovery is a well known advantages of trading system. Value of historical price series is well recognized and longue historical series can be easily found on the web. However this is only a small part of information that trading venues are able to provide. It is therefore still a little bit surprising that they don't expand their current set of data with others synthetic indicators on types of orders, best bid and ask, immediate depth, average trade size by order type, etc. ,which could improve the understanding of price discovery process.

Could we consolidate information provided by trading and reporting system?

Although both systems generally publish the same set of data (number of trades, number of traded shares, turnover, etc.) a direct comparison could be difficult to undertake. Moreover gathering together both systems as if they were totally separated entities, could be misleading to accurately understand how security markets really work.

Who reports?

By contrast with trading system and specifically by displayed markets where trades are immediately disseminated without traders' intervention, reporting requires explicit steps from traders.

In the straightforward situation, seller and buyer report their common trade to the same reporting system. Comparison with what could happen in a trading venue is easy and it is possible to cross from reporting data to trading data by dividing by two the reporting figures, taking into account the fact that both the seller and the buyer reported the trade. When reporting system will publish a turnover of 2 000 (buyer and seller reporting each 1 000), the trading venue will disseminate a turnover of 1 000.

However the previous situation is likely to become less and less frequent as number of execution venues and reporting systems increases. In this new situation, we will observe:

- seller and buyer reporting to two different reporting systems,

- the same trade reported partially or totally to several systems.

In these cases, it will not be possible to mirror data provided by reporting system with what could happen in a trading system.

What should be reported?

In order to avoid lack of understanding in reporting process, it is important to minimize the extent to which a different trading process could lead to different reporting obligations or different interpretations of reporting.

A question often raises is that of riskless principal transaction, this is a transaction in which a member, after having received an order to buy (sell) a security, purchases (sells) the security as principal and satisfies the original order by selling (buying) as principal at the same price. The following pattern sums up the situation.



As transfer of ownership between end-investors is immediate, the previous situation is often regarded as one-trade transaction and reported once to a reporting system.

In reality, a certain uncertainty could remain depending on the time the member succeed to offset the initial trade. Depending on its aversion for risk, the trader could eventually choose to report several trades:



In this latter situation, analysis of reporting data could be ambiguous for they can potentially mirror trader's risk aversion. If this phenomenon becomes more and more extensive, we could observe an increase of reported trades in high volatile market.

Deferred publication

Most regulation requires the trader to report their trade as close to real time as possible. However, in case of large scale transactions it is possible to report within a certain delay. For example, the European Markets in Financial Instruments Directive (MiFID) which came into force 1 November 2007 allows a delay from one hour to three trading days according to the liquidity class of the share and to the size of the trade.

Unless the recorded and traded date are both given by reporting system, it is not possible to compare on a day by day basis trades published by reporting system and those disseminate by trading venues. These deferred publications create discrepancies that make more complex comparison between data of the both systems.

The previous examples show the difficulties to bring reporting system and trading system back together. They equally show that trades disseminate by trading venue and trades published by reporting systems are not totally independent.

Trades publically known through a reporting system or TRF (Trading Reporting Facility) are often view as OTC trades; meaning trades which are achieved away from displayed trading venues, exchanges, MTFs or ATSS. But as the trading process is becoming more

complex with a search of liquidity on different pools, it is likely that an order will be totally executed on different trading venues.

On the other hand, all orders addressed to brokerage firm or “systematic internalisers” could not be totally matched with orders of their other customers. Indeed, it is a well know fact that order flow entrusted to brokerage house by their customers are most often unbalanced. This phenomenon leads big brokerage houses to consolidate their internal liquidity by external sources of order flow or seek missing liquidity on other trading venue. It is thus possible that some orders reported through reporting mechanisms included a proportion of trades executed on trading platform.

Most often reporting systems will mirror the complexity of the trading process as well as the reporting rules. This will make difficult to compare and analyse data coming from these systems.

Some light could be shed on this complex situation by providing more information to the market. For example, reporting system could publish separately trades reported by the sellers and those reported by the buyers. Imbalance between the two order flows could give a rough idea of the interaction between different execution venues. Distinction between trade done as principal and trade done as agency could also make clearer the information made available to the public.