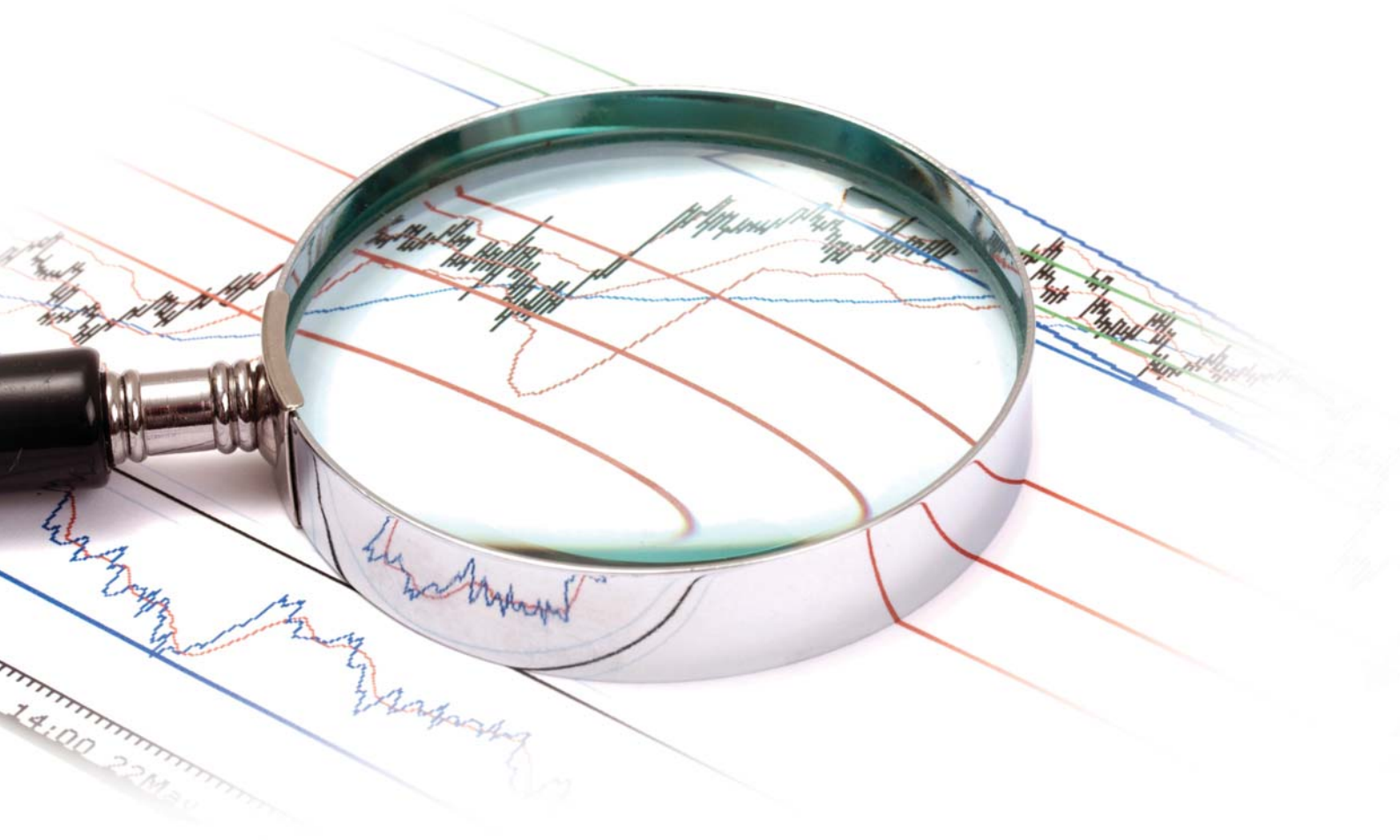
Trade Surveillance Handbook - Series Two

May 2018

Singapore Exchange



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Introduction

The inaugural *Trade Surveillance Handbook – Series One* was published by SGX in September 2016 to create greater awareness on potential trading malpractices like Spoofing, Layering and Marking the Close. Members' strong and committal collaborative efforts in fostering fair trading practices and upholding market integrity following the publication of Series One of the Handbook have been very encouraging.

To build on these efforts, Series Two of the Handbook further sets out SGX's expectation in relation to trading practices on Wash Trades and Order Management during the Opening Routine in the derivatives market and provides guidelines which Members may incorporate as part of their surveillance programmes in detecting and examining these potential malpractices.

This release also features Momentum Ignition, another trading behaviour which has come under increasing global regulatory scrutiny. While Momentum Ignition is not observed in SGX's markets, Series Two of the Handbook seeks to provide a set of markers for Members to consider should they come across possible instances of Momentum Ignition.

In addition, this Handbook will shed some light on two recent cases heard before the independent Disciplinary Committee in relation to spoofing activities and pre-arranged trading. An exposition of the case studies is aimed at helping Members appreciate the relevant assessment carried out by SGX and the Disciplinary Committee's considerations in each case. Last but not least, the third case study in this Handbook sets out SGX's expectations on the best practices in relation to accepting and executing customers' orders in the securities market.

Members should note that the guidelines and indicators which are provided in the Handbooks are neither exhaustive nor definitive. It should be emphasised that the requirements under the SGX Rules apply equally to all Members and their representatives, regardless of their modes of trade execution, trading strategies or business activities. Members should tailor their internal detection/investigation processes in a manner which is commensurate with the complexity of cases in question as well as their business activities, taking into account that some cases may involve various types of potential trading malpractices.

Derivatives Trading Practices

This section aims to firstly provide Members with guidance and clarity on the types of potential trading malpractices which may be observed in the derivatives market, in particular, practices which relate to wash trades and order management during the opening routine.

This section will further discuss on Momentum Ignition, a trading behaviour which even though has not been observed in SGX's markets, has come under global regulatory scrutiny and piqued market participants' interest. Should Members come across possible instances of Momentum Ignition, Section 2.3 of this Handbook provides a set of guidelines to help Members identify such trading malpractice as well as incorporate into their surveillance programmes.

2.1. Wash Trades

Wash trades refer to trades between the same participant without an effective change in beneficial ownership. These trades are not subjected to market risk or price competition and are considered as fictitious transactions. Such fictitious transactions are prohibited under Futures Trading Rule ("FTR") 3.4.9 - Fictitious Transactions without Change in Ownership as they do not involve a *bona fide* change in market position or aid in price discovery.

Notwithstanding the above, SGX recognises that there may be permissible circumstances where FTR 3.4.9 will not apply. The exceptions are set out in FTR 3.4.9(a) to FTR 3.4.9(c), which include, orders from fund managers whose instructions are intended to switch the contract from one sub-account to another for legitimate commercial reasons, booking out of orders to different beneficial owners, or in instances where the Member or Approved Trader satisfies the Exchange that their transactions do not violate the prohibition on wash trades.

2.1.1. Guidelines on Wash Trade Monitoring

As part of Members' review of self-matched trades, Members may wish to consider adopting the following indicators on its own or in combination:

(i) **Account Structure** – An omnibus account, held under the name of one customer, might have multiple different beneficial owners. As such, it is important for Members to assess if the orders are for different ultimate beneficial owners within the omnibus account.

(ii) **Market Impact** – Larger trades that deviate from market levels are more likely to be employed to create a false appearance of market activities or create artificial price pressures. Consequently, greater regulatory scrutiny tends to be placed on larger trades as a greater number of market participants could be unnecessarily affected. Nevertheless, Members should note that smaller wash trades may also be on the radar if a discernible pattern of wash trades is observed.

(iii) **Decision Making Process** – In the context of proprietary trading, there could be individual traders or a team of traders who carry out fully independent trading strategies. It is also possible for customers to run multiple trading strategies or algorithms in parallel for different purposes such as arbitraging and hedging. Although the decision-making for each team/strategy could be independent, adequate safeguards should be in place to prevent unintentional wash trades, including but not limited to information barrier policies, and reasonable and adequate oversight on the trading.

(iv) **Implied/Bait Orders** – The SGX-DT trading engine features a derived order functionality for selected spread or combination products. The trading engine generates, with this functionality, implied or bait orders in the relevant outright leg contracts to facilitate trades in the spread instrument. Such implied or bait orders are not directly placed by the Member, but are automatically derived by the trading engine from spread or combination orders entered by the Member. Self-match scenarios involving these implied or bait orders generally warrant less regulatory concerns unless suspicions arise of a deliberate attempt to take advantage of this capability.

(v) **Frequency of Occurrence** – While isolated incidents may be attributed to inadvertent coincidence, recurring behaviour will appear more suspicious. It is therefore useful for Members to monitor patterns of repeated incidences of self-matching trades.

2.1.2. Tools for Self-Trade Prevention ("STP")

In addition to post-trade monitoring, Members are encouraged to make use of tools which are designed to prevent self-trading to avoid unintentional wash trades. Such STP tools may be in the form of checks activated at the Members' order management system, or self-trade prevention checks implemented at the trading engine level.

In ensuring that the STP tools are effective, it is important for market participants to review, test and update their existing STP functionalities when introducing new or revised algorithmic trading strategies. Members are reminded that any new deployment or subsequent revision to their algorithmic trading strategies should be well-tested prior to the introduction in the production environment. The STP functionalities should also be evaluated and updated accordingly to ensure that the controls function properly and as intended.

In November 2016, SGX launched its Titan DT/DC incorporating STP functionalities to avoid self-matching trades during the continuous matching phase. The current STP functionalities allow Members to tag orders from its account using a unique Participant Code and reject an incoming order if only orders from the same account are available in the order book. If an incoming order can trade partially against other accounts, the "Cancel Aggressive" function will reject the remaining order if only orders from the same account are left in the order book. These STP functionalities will help market participants avoid incidental self-matching and reduce programing complexity in Members' trading strategies. Members may use this optional functionality in Titan DT/DC to complement any existing controls and checks at the level of the Members' order management system.

SGX will be enhancing the STP functionalities to allow for greater customisation to further aid Members in reducing the possibility of unintended self-matching. Two such key enhancements include:

(i) **STP key for different trading strategies**

The new STP key feature allows Member to indicate a unique STP key for different trading strategies employed by the same account. The combination of same participant code and STP key prevents the matching of buy and sell orders from the same trading strategy within the same account, while allowing the matching of orders from independent trading strategies within the account (refer to Para. 2.1.1 (iii)) to be possible.

(ii) **"Cancel Passive" option**

The addition of "Cancel Passive" prevention function provides Member with the option to cancel its entire resting order when an attempted self-match by the same combination of participant code and STP key is triggered.

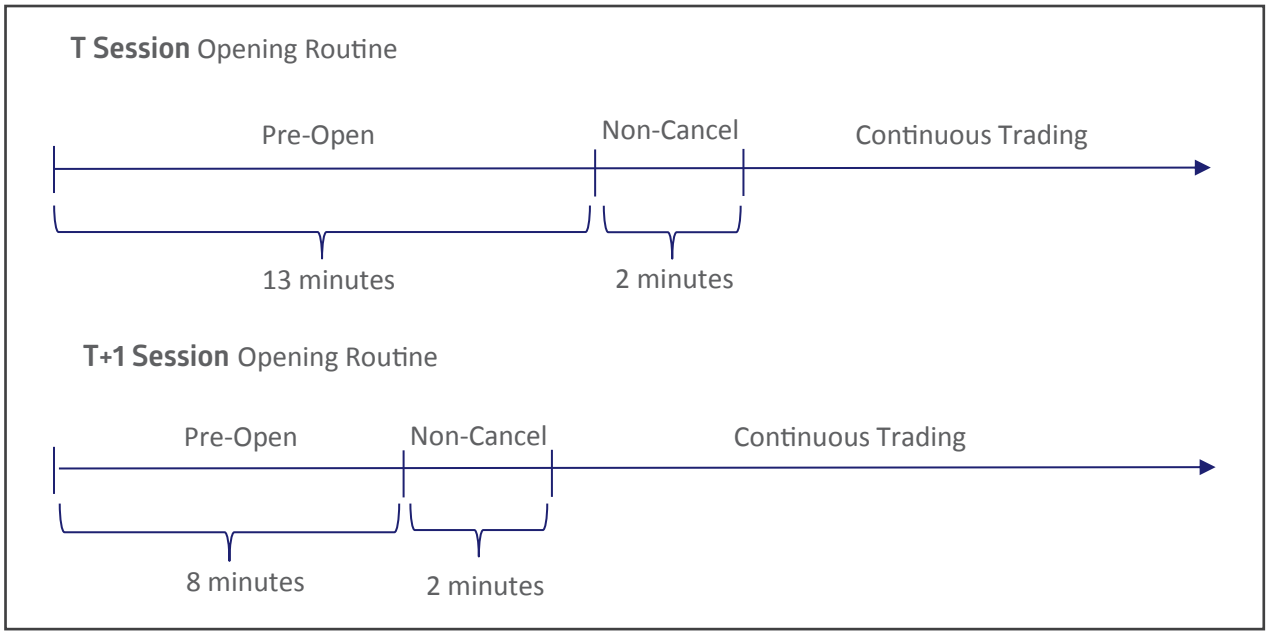
For more information on the technical specifications in relation to the STP functionalities on Titan DT/DC, please visit SGX's website.

2.2. Order Management during Opening Routine

SGX has received feedback from market participants that they have observed a sudden influx of large orders at the start of the opening routine which were either amended or deleted shortly after entry. This section thus seeks to provide guidance to Members on what may be considered as potential trading malpractice during this session state in the derivatives market. In addition, this section will clarify that Quote Stuffing is a trading strategy which does not apply during the opening routine.

2.2.1. Opening Routine

SGX-DT's continuous trading session is preceded by an opening routine. The opening routine comprises a Pre-Open phase followed by a Non-Cancel phase. With the launch of Titan DT/DC on 14 November 2016, SGX-DT has standardised the duration of the Pre-Open and Non-Cancel phases of the opening routine in our derivatives market. The diagrams below illustrate the current timings and Members may refer to the relevant Members' Circular (DC/AM - 81 of 2016) for further information.



An opening routine allows market participants to put through their orders before trading commences. The purpose of an opening routine is to enable orderly price discovery when the market opens. Market participants can manage their orders during the opening routine in reaction to overnight news announcements, movements in overseas markets, underlying or related markets, or changes in the indicative opening price.

Such order management activities may include (i) removal of carried forward orders that are no longer relevant, (ii) deletion of orders which are unlikely to be traded, or (iii) amendment of orders in relation to the price and/or quantity in response to the release of new public information, market movements or change in trading strategies.

Market participants should, when managing orders during the opening routine, ensure that the orders are entered in good faith for the purpose of executing bona fide transactions, as stipulated under FTR 3.4.8 - Good Faith Bids and Offers. These orders should not cause disruptions to other market participants or result in adverse market impact.

2.2.2. Guidelines for Order Management during Opening Routine

In assessing whether there is any potential trading misconduct during the opening routine, Members may consider among others, the factors below:

(i) **Order Management Near Non-Cancel Phase** – Market participants would have limited time to react if orders are significantly amended or deleted near the Non-Cancel phase, especially if the amendments or deletions result in substantive changes to the indicative equilibrium prices or cause potential impact to other market participants. This may possibly be construed as deliberate attempts at manipulation.

(ii) **Repeated Occurrence** – Repeated occurrence of significant order management activities such as massive order amendments or deletions near the Non-Cancel phase without legitimate explanations may suggest a systemic or indicative pattern of trading malpractice.

Members should take note that the above guidelines do not preclude SGX from taking action if there are reasonable suspicion of potential trading misconduct at any point during the auction period. That said, SGX adopts a risk-based approach to enforcement actions. Enforcement actions are more likely in cases where there are greater risks of adverse impact to market integrity.

2.2.3. Quote Stuffing

SGX is aware that some market participants have incorrectly labelled the trading behaviour above (i.e. the entry of large number of orders and subsequent amendments and/or deletions during the opening routine) as "Quote Stuffing".

To clarify, Quote Stuffing generally refers to the trading behaviour where a trader enters an unusually large number of orders and subsequently amends and/or deletes them within a short time span, with the intention to overload the trading engine and/or to delay other market participants' execution of trades. Generally, the said orders are entered with no intention of being filled and the orders have a short time exposure to the market before being amended and/or deleted. When Quote Stuffing occurs, Members can expect to observe a high order-to-trade ratio and/or high order amendment/deletion rate. In addition, the utilisation of the trader/customer's Application Programming Interface ("API") capacity is likely to be maximised.

While there might be some resemblances between what market participants have observed during the opening routine (i.e. amendments or deletion of orders shortly after entry) and the characteristics of Quote Stuffing, market participants should take note that the main purpose of Quote Stuffing is to create exploitable latency arbitrage opportunities during continuous trading sessions where a trader could attempt to benefit from the inefficiencies in data between exchanges or other market centres. Quote Stuffing therefore does not occur during the auction period when continuous trading does not take place. In fact, SGX has not observed Quote Stuffing activities in our markets.

2.3. Momentum Ignition

The growth in automated trading has led to increased regulatory attention on trading practices such as Momentum Ignition. Momentum Ignition has been considered by some to have impaired fair and orderly trading in a marketplace. In particular, IOSCO has called for a need to review and enhance trade surveillance tools to detect, among others, Momentum Ignition[1].

Although SGX has not actively observed Momentum Ignition activities in our derivatives market, such trading practices may potentially distort the operation of a fair, orderly and transparent market of which we are committed to maintain. Momentum Ignition, when employed to fraudulently induce market participants to trade, may also be construed as market manipulation.

The following section discusses the known characteristics of Momentum Ignition and provides Members with three indicators to consider as part of their surveillance monitoring should they come across instances of possible Momentum Ignition.

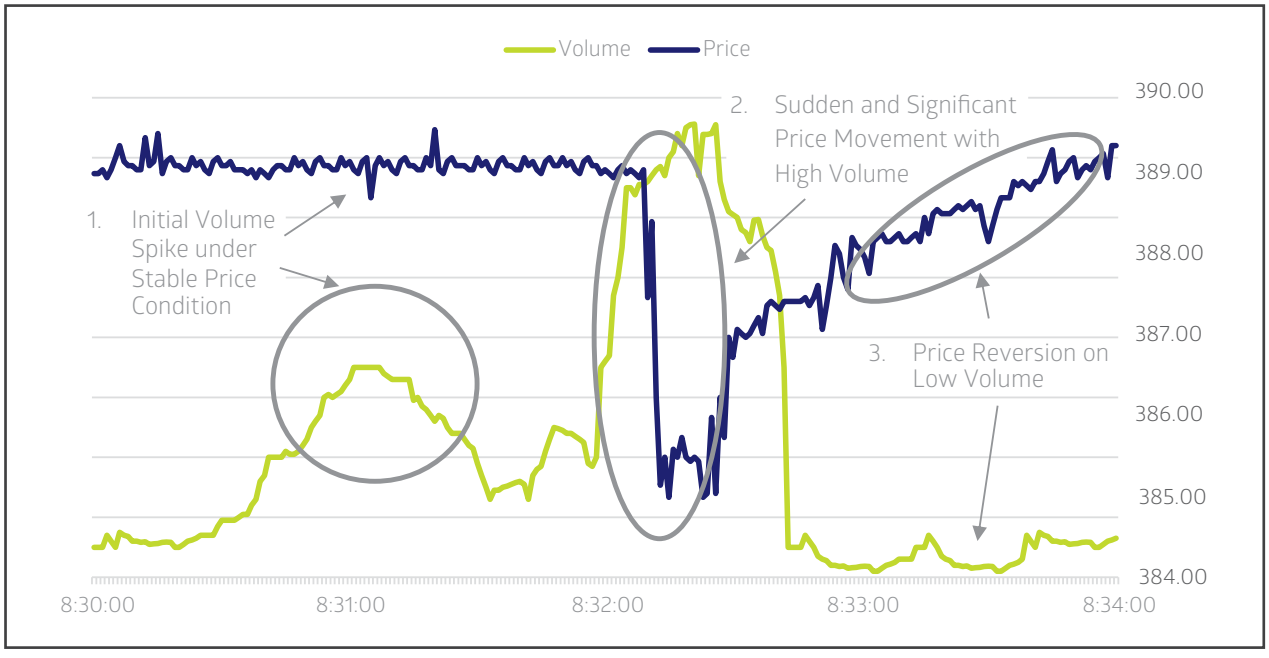
2.3.1. What is Momentum Ignition?

Momentum Ignition typically occurs when a market participant initiates a series of orders or trades ("momentum orders") with the intent of inducing other market participants to trade in the instrument so as to accelerate or extend the price trend in the market or a related market. Momentum Ignition can be characterised by:

(i) **An initial spike in volume under stable price condition**
Momentum orders are entered by the errant trader in an attempt to bait other market participants to react or chase the orders.

(ii) **Sudden, significant price movement with further spike in volume**
Other market participants enter orders in reaction to the errant trader's orders, causing a sudden sharp price movement.

(iii) **Price reversion to or near starting price under a lower volume**
The errant trader trades out of his existing position or opens a position at a favourable price and amends or deletes the momentum orders, hence causing the price reversion.



[1] *Addendum to IOSCO Report On Investigating And Prosecuting Market Manipulation, April 2013*

It should be noted that for a trading practice to be identified as potential Momentum Ignition, it is essential that all the three characteristics of Momentum Ignition as set out above are present. An order that merely triggers a price or volume spike, in and of itself, may be carried out for legitimate reasons and does not conclusively represent a form of trading malpractice. Momentum orders, on the other hand, are executed with the intent to induce or mislead other participants and resultantly cause an artificial price movement, typically for the purpose of attaining momentary benefits (e.g. closing out an existing position or opening a position at a favourable price).

Momentum Ignition may create a false or misleading appearance of active trading in an instrument or lead to the creation of a false market. Consequently, market participants who jump in at the tail end of the ignition may be significantly disadvantaged as the price reverses quickly once the original igniter drops out. In reviewing instances of significant price or volume movements, it is therefore important for Members to determine if the orders or trades which trigger the initial volume spike are supported by legitimate commercial reasons or are in tandem with prevailing market movements. Repeated occurrence of trading activities that cause price or volume aberrations may cast doubt on the intent behind such trading behaviours.

2.3.2. Indicators of Momentum Ignition

Members may consider the indicators below in conjunction with their internally customised detection and/or investigation processes should they come across instances of potential Momentum Ignition. The list of indicators is non-exhaustive and should be reviewed holistically:

(i) **Price Movements** – The trader's entry of orders (and the resultant trades) typically triggers a sudden significant change in the price and is followed by a price reversion to or near the original price level (i.e. prior to the trader's initial orders) within a short time span. Where appropriate, Members should consider the price movement of the instrument over the period of time in relation to the underlying cash market or commodity.

(ii) **Duration of Momentum Ignition** – Momentum Ignition events tend to occur within a short time span of over a few minutes. During this period, the market tends to experience a concentration of orders and trades that account for a significant proportion of the daily traded volume.

(iii) **Size of Orders** – Instances where the orders entered by a trader represent a significant proportion of the order book may suggest his attempts to induce other participants into the market. The orders would typically not be in line with the trader's recent trading activities.

Case Studies

In recent times, SGX had referred several cases of trading misconduct to the Disciplinary Committee ("DC"), which had meted out various disciplinary actions against the traders concerned for the market malpractices which they had committed.

The following section aims to provide Members with insights into SGX's assessment and considerations in two of these cases – spoofing in the derivatives market and pre-arranged trading in the securities market. We will also share on the unique factors present in these cases, which Members may incorporate as part of their surveillance programmes in detecting and examining the respective malpractices.

Members may refer to the Appendix for SGX's explanatory notes on the diagrams from the SMARTS surveillance system shown in the case studies below.

Information on all the past disciplinary cases can be found in the Circulars and the Grounds of Decision, which are also available on SGX's website.

A third case study further provides guidance on the best practices relating to trading conduct in the securities market, in particular, the execution of customers' orders which may be potentially manipulative.

3.1. Case 1: Spoofing in the Derivatives Market

3.1.1. What is Spoofing?

Spoofing typically occurs when an errant trader submits a genuine order on one side of the order book, and then submits excessively large orders on the other side of the order book which he does not intend to trade. Upon execution of the genuine orders, the trader will rapidly delete the fictitious orders.

The fictitious orders are entered to create a false impression of the balance between market supply and demand. Other market participants may unwittingly enter the market to place orders, either to buy or sell based on these fictitious orders. The orders also improve the trader's chance of another market participant matching his genuine order.

Members may refer to *Section 2.2 of the Trade Surveillance Handbook – Series One* for further information on spoofing.

3.1.2. Case Study on Spoofing

On 28 April 2017, SGX brought five charges against a registered Trading Member (Individual) ("TMI"), Trader A, before the SGX-DT DC for violating FTR 3.4.8, which states that a Member or an Approved Trader shall not knowingly enter, or cause to be entered, bids or offers into the Trading System other than in good faith for the purpose of executing bona fide transactions. Members may also refer to Practice Note 3.4.8 of the FTR for an illustration where SGX may not consider a bid or an offer to be in good faith.

In essence, an order is likely to be non-bona fide if the trader enters the order, with the intention at the time of entry, to delete that order before its execution.

In this case, Trader A had engaged in a spoofing scheme for a protracted duration of eight months. During this period, Trader A did not cease his non-compliant trading behavior despite three reminders from SGX informing him that his orders did not appear to have been entered in good faith for the purpose of executing bona fide transactions. In addition, Trader A opened a separate trading account after receiving the first reminder to continue his spoofing scheme, presumably to avoid detection.

At the conclusion of the hearing, the SGX-DT DC imposed an aggregate fine of $200,000 and ordered that Trader A be expelled as a TMI.

The following diagrams depict the *modus operandi* of Trader A's spoofing scheme in the SGX FTSE China A50 Index Futures Contract. Trader A's orders are highlighted as the light green and light red bars.

Step 1: Enter genuine orders

Step 1 – Trader A's *modus operandi* involves him entering relatively small orders on one side of the order book which he intends to trade. In the TICK-DEPTH screen above, these genuine orders are on the sell side of the order book and are indicated by the light red bars in the white box.

As at **11:31:02.491 hours**, Trader A has three resting sell orders of 30 lots each at prices between US$10,787.50 and US$10,792.50, three price levels from the best ask price.

Step 2: Enter large non-bona fide orders

Step 2 – Trader A's *modus operandi* involves him systematically placing large orders (i.e. orders in excess of 100 lots) on the opposite side of the order book. Trader A's large orders are typically excessive in size when compared with other market participants.

At **11:31:04.116 hours**, in less than two seconds, Trader A has entered three large buy orders at prices between US$10,780 and US$10,785. Instantly, the total buy volume at the prices between US$10,780 and US$10,785 increases by 140%, of which Trader A accounts for 72% of the total buy order volume. These three non-bona fide orders are indicated by the white box in the above TICK-DEPTH screen.

As compared to the first TICK-DEPTH screen, it is apparent that the TICK-DEPTH screen in Step 2 reveals an imbalanced order book. The TICK-DEPTH screen shows that the total buy order volume is 2.8 times the total sell order volume at the price levels between US$10,780 and US$10,785, creating a false impression of increased buying interest in the contract.

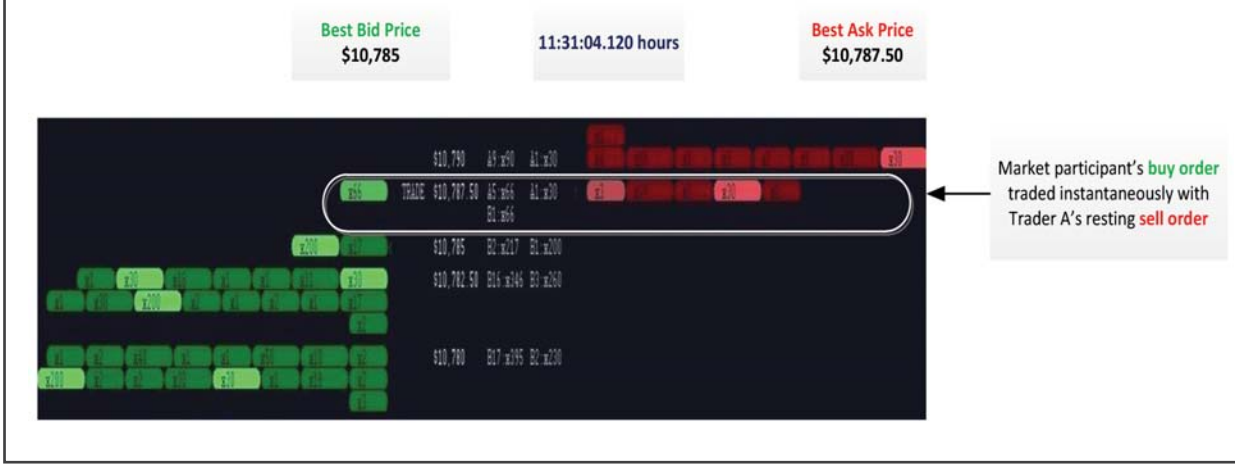
Step 3: Market participant tricked to enter orders

Step 3 – Market participants are attracted to enter the market after being misled by the false impression of heightened buying interest. To gain priority over Trader A's large non-bona fide orders, market participants entered their buy orders at prices above Trader A's large buy orders.

The above REPLAY Diagram illustrates that at **11:31:04.120 hours**, a market participant enters a buy order for 66 lots at US$10,787.50 which was one tick above the best bid price, i.e. US$10,785, a price that is not representative of actual demand in the contract.

Taking into consideration that this market participant already has two resting buy orders in the queue at lower prices and for only one lot each, it is likely that he has been misled by Trader A's disproportionately large buy orders to enter the buy order for 66 lots above the best bid price.

Step 4: Trades executed at artificial prices



Step 4 – The market participant's buy order is executed against Trader A's genuine sell orders. The above diagram shows that the market participant's buy order at US$10,787.50 is instantaneously traded with Trader A's resting sell order at **11:31:04.120 hours.**

In the interim period, Trader A continues to enter large buy orders at increasingly higher prices. As at **11:31:05.490 hours**, Trader A's large non-bona fide orders account for 74% of the total buy order volume at prices between US$10,780 and US$10,787.50. Under Traders A's spoofing scheme, more market participants are misled to trade against Trader A's genuine sell orders at higher prices.

Step 5: Deletion of large non-bona fide orders

Step 5 – Trader A's *modus operandi* involves him systematically and simultaneously deleting his large orders after the genuine orders are filled. The above diagram on the left shows an imbalanced order book at **11:31:09.612 hours**, with Trader A's four large buy orders. The above diagram on the right shows the order book at **11:31:11.945 hours**, about two seconds later, after Trader A has deleted the non-bona fide orders.

With the deletion of the non-bona fide large orders at **11:31:11.945 hours**, the total buy order volume at those price levels decreases by 70% and instantly results in a sharp reduction in buying interest in the SGX FTSE China A50 Index Futures Contract. The large buy orders have created a false impression of the market liquidity and misled market participants into filling Trader A's resting sell orders.

In addition, the large buy orders are only exposed to the market for up to a few seconds before being deleted. Further, the large order most proximal to the best quoted price is deleted first while the large order most distant from the best quoted price is deleted last, to prevent the large orders from being inadvertently executed. It is thus apparent that the large buy orders are entered by Trader A without the intent to be filled.

Step 6 – Trader A would quickly flip over to the opposite side of the order book to repeat the modus operandi there.

3.1.3. Indicators of Non-Bona Fide Orders

The following factors were used to identify non-bona fide orders in the factual matrix of Trader A's case:

(i) **Excessively Large Orders** – The large orders were excessive in size as compared to the other orders in the order book. For example, Trader A's large orders in the SGX FTSE China A50 Index Futures Contract were for 100 lots or more, whereas in comparison, other market participants entered orders for one to 50 lots.

(ii) **Imbalanced Order Book** – Multiple large orders were simultaneously entered by Trader A on the same side of the order book and were stacked on as many as five to eight price levels from the best quoted price, which resulted in an imbalanced order book due to their sheer size. In most instances, Trader A's large orders accounted for more than 70% of the total order volume at those price levels.

(iii) **Disproportionate Deletion of Large Orders** – The large orders entered by Trader A had a high deletion rate, ranging from 96.9% to 99.1%. The order volumes of the large orders were disproportionately deleted by Trader A and it was obvious that Trader A did not intend for the large orders to be executed. In particular, the deletions of the large orders almost always coincided with the fill of the smaller genuine orders.

(iv) **Disproportionately Low Percentage of the Large Orders was Executed** – Trader A had a very low trade-to-order volume ratio for the large orders, with only 0.1% to 2.4% of the large orders eventually executed as trades. Given this extremely low trade-to-order volume ratio, Trader A undoubtedly did not have the intention to execute the large orders which he initially entered.

(v) **Lower Deletion of Small Orders** – While Trader A had deleted almost the entire volume of his large orders (96.9% to 99.1%), he deleted a much lower percentage of the volume in relation to his small orders (39.9% to 77%).

(vi) **High Execution Rate for Small Orders** – Trader A's trade-to-order volume ratio for large orders, ranging from 0.1% to 2.4%, was significantly lower than that of the small orders, which ranged from 23% to 60.1%. The huge disparity between the figures could only be because Trader A did not intend for his large orders to be executed.

(vii) **Short Resting Time before Deletion of Large Orders** – Most of the large orders had a short resting time before deletion. In this regard, 45% of the large orders were deleted within three seconds of entry. The short resting time strongly suggests that the large orders were entered with the intent to be deleted before execution.

(viii) **Shorter Resting Time for Large Orders at Best Quoted Price** – Trader A's large orders which were deleted at the best quoted price had the shortest time exposure, likely because they had the highest risk of execution. Specifically, 62% of the large orders at the best quoted price were deleted within three seconds, compared to 45% for the other large orders within the same resting time period.

The SGX-DT DC held that Trader A's large orders were entered with the intention to mislead other market participants into reacting to the artificial impression of supply and demand created by him. Through his non-bona fide and misleading large orders, Trader A interfered with the genuine forces of supply and demand, thereby affecting the integrity of the price discovery process as well as other market participants' ability to accurately assess the level of liquidity on the order book.

3.1.4. SGX's Concerns with Trader A's Conduct

Trader A had acted evasively whenever SGX queried his trading strategy of entering and deleting large orders in quick succession. Instead of addressing the specific issues raised by SGX, Trader A provided a generic explanation of inter-market arbitrage. Trader A also persistently refused to furnish SGX with the relevant documents and trade records to substantiate his case of inter-market arbitrage. Accordingly, the SGX-DT DC took a serious view of Trader A's attitude towards SGX as a regulator and considered it an aggravating factor in calibrating an appropriate sentence on Trader A.

In light of the above, market participants are reminded of their obligations to render all assistance as SGX requires when enquired about their trading activities, and furnish the relevant documentary evidence to substantiate their trading strategies to SGX in a timely manner.

As SGX's enquiry on a customers' trades is typically routed to the relevant Member, SGX also seeks Members' assistance with the information request. In particular, Members should assess and be reasonably satisfied with the explanation provided by their customer, before furnishing the information to SGX.

3.2. Case 2: Pre-Arranged Trading in the Securities Market

3.2.1. What is Pre-Arranged Trading?

Pre-arranged trading typically involves the entry of an order or orders for the purchase (or sale) of a security with the knowledge that an order or orders of substantially the same size, at substantially the same time and at substantially the same price, for the sale (or purchase) of the security has been or will be entered by or for the same or different parties (excluding married trades). It would include any purchase or sale, transaction or series of transactions, coupled with an agreement, arrangement or understanding (directly or indirectly) to reverse such transaction, which is not done for a legitimate commercial purpose or without subjecting the transactions to market risk.

Such trading behavior has the effect of creating a false or misleading appearance of active trading in the security. In addition, pre-arranged trading has the effect of improperly excluding other market participants from the transaction under consideration, as the first bid or offer was not adequately exposed to the market.

SGX views pre-arranged trading as potentially manipulative as it interferes with the free and fair operation of a market and could disrupt the price discovery process. It is, in substance, executing risk-free transactions at pre-determined prices rather than at market prices, thereby limiting the risk to the parties involved and limiting the market for other participants. As the transfer of beneficial interest is only between persons who are acting in concert or collusion, there is essentially no legitimate commercial rationale behind pre-arranged trades. Major jurisdictions such as the US and the EU strictly prohibit pre-arranged trading and view it as a form of market abuse.

3.2.2. Case Study on Pre-Arranged Trading

On 27 October 2016, SGX brought six charges against a Trading Representative ("TR") of Member A ("TR A"), and a TR of Member B ("TR B") before the SGX-ST DC for creating a false or misleading appearance of active trading in various securities for a protracted period of time. The SGX-ST DC imposed a fine of $70,000 and suspension of three months on TR A and a fine of $60,000 and suspension of two months on TR B.

For the two proceeded charges under SGX-ST Rule 13.8.1, which prohibits a Trading Member or TR from engaging in any act or practice that will create a false or misleading appearance of active trading or lead to a false market in any securities, SGX submitted that TR A and TR B facilitated the execution of pre-arranged trades in the securities in question.

During a prolonged period of about 10 months between 16 February 2015 and 4 December 2015 (the "Relevant Period"), it was discovered that TR A and TR B (collectively, the "2 TRs") executed pre-arranged trades in accounts belonging to them or their customers ("Relevant Accounts") in the shares of Far East Group Limited ("FEGL"), a relatively illiquid counter.

This case study will describe the manner in which the 2 TRs created a false or misleading appearance of active trading in FEGL shares by arranging for the execution of pre-arranged trades in the Relevant Accounts.

Modus Operandi: Matching of Buy and Sell Orders in-between the Spread

The above diagram depicts the *modus operandi* of the 2 TRs. One of the TRs will act as a seller. Almost always, the seller has a position due for settlement. In order to gain priority over other market participants, the seller would enter a sell order at a price lower than the prevailing best ask price, in this case at $0.133, and establishing the new best ask price of $0.133. The quantity of the sell order is also typically very large, when compared to other orders on the order book at that point in time.

Almost immediately, the other TR will act as the buyer and enter a corresponding buy order or several buy orders on the opposite side of the order book. The buy order would be for the same quantity as the sell order and at the same price, i.e. $0.133, which resulted in a pre-arranged trade.

When the buyer's position is due for settlement, the same *modus operandi* would be utilised to find a new buyer or buyers from within the Relevant Accounts.

Step 1: Enter large sell orders

Step 1 – The above REPLAY diagram shows the FEGL order book on 28 April 2015. At **10:40:43 hours**, TR B entered a sell order for 1,000,000 FEGL shares at the price of $0.147 in his wife's trading account. Apart from this sell order for 1,000,000 FEGL shares, there was another sell order (entered by another Member) for 1,700 FEGL shares resting at the best ask price of $0.148.

TR B's sell order was disproportionate to the order book as it was more than 20 times the size of the buy order volume of 45,000 FEGL shares, and nearly 600 times the size of the remaining sell order volume of 1,700 FEGL shares.

Step 2: Matching in-between the spread

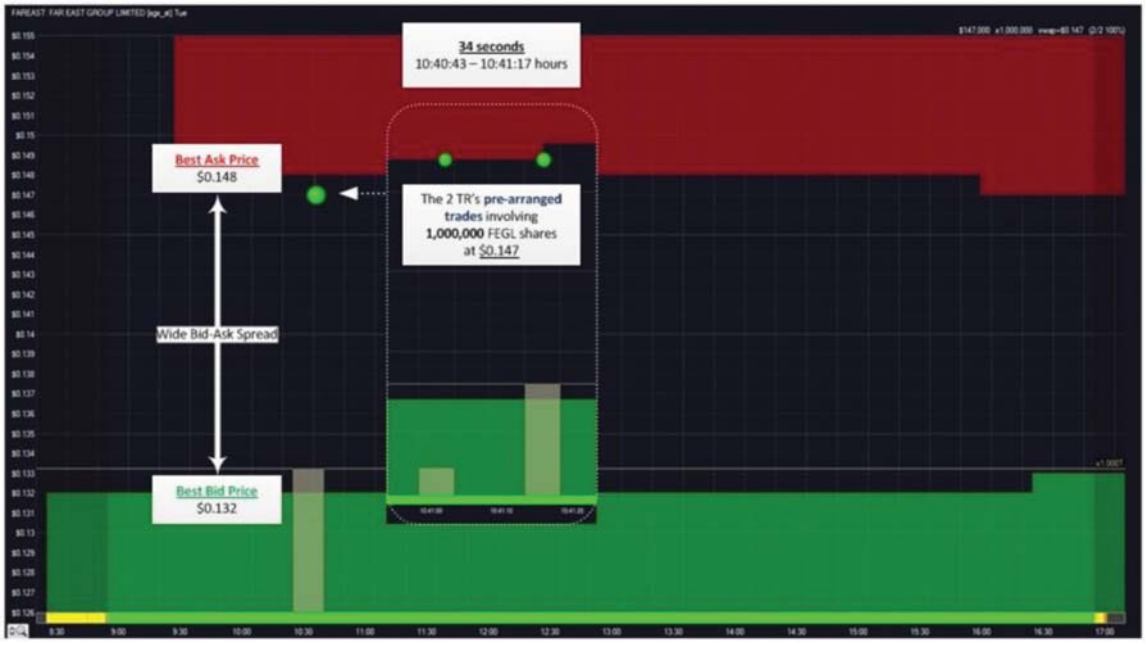
Step 2 – 20 seconds after TR B has entered his sell order (i.e. at **10:41:03 hours**), TR A crossed the spread and entered a buy order for 200,000 FEGL shares at the price of $0.147, which was the same price as TR B's sell order.

The buy order price of $0.147 was at the best ask price and 15 bids above the best bid price of $0.132. TR A's buy order immediately matched with TR B's sell order and TR B's sell order was left with a balance of 800,000 FEGL shares.

Step 3: Successive Matching

Step 3 – 14 seconds later, at **10:41:17 hours**, TR A entered another buy order for 800,000 FEGL shares at $0.147, which corresponded with the remaining quantity of TR B's sell order. TR A's buy order immediately matched with TR B's unfilled order balance of 800,000 shares in its entirety.

Zoomed-in Graphical Display of Trading Activities in FEGL shares on 28 April 2015



The above SPREAD diagram shows that there was a short period of 34 seconds between the entry of TR B's sell order and the complete fill of the sell order by TR A. Accordingly, other market participants were excluded from these trades as the orders were not adequately exposed to the market. In addition, these two trades were the only trades of the day and would not have occurred if the 2 TRs had not intentionally matched their orders.

The cycle as described above continued for 10 months until the position was eventually closed.

3.2.3. Indicators of Pre-Arranged Trades of Manipulative Nature

SGX found the pre-arranged trades executed by the 2 TRs to be manipulative, for the following reasons:

(i) **Disproportionate to Order Book and Market Volume** – The volume of the pre-arranged trades was disproportionate to the order book as well as the market volume. The volume of the pre-arranged trades constituted 96% of the market volume in FEGL shares on 46 days where the 2 TRs traded in the security during the Relevant Period. In other words, had the pre-arranged trades not been executed, the actual market volume would have been only 4% of the market volume on these 46 days.

(ii) **Frequency of Occurrence** – The 2 TRs and their customers were passing a parcel of shares amongst themselves regularly, and the same parcel of shares changed hands whenever it was due for settlement. This cycle continued for 10 months in FEGL shares, with the pre-arranged trades occurring on every five to six days.

(iii) **Market Impact** – The pre-arranged trades were executed with persistent regularity and implemented over a prolonged duration. This created a false or misleading appearance of active trading in FEGL shares, which would have been relatively illiquid if we exclude the pre-arranged trades.

(iv) **Close Time Proximity of Order Entry** – A significant proportion of the buy and sell orders which resulted in the pre-arranged trades were entered at about the same time. This time proximity had the effect of excluding other market participants from the transactions.

At the conclusion of the SGX-ST DC hearing on 27 October 2016, the SGX-ST DC opined that the pre-arranged trades executed by the 2 TRs had by their disproportionate volume, greatly impacted the market volume in the security concerned and the execution of the pre-arranged trades over a prolonged duration had resulted in a market which did not reflect the genuine forces of market supply and demand.

3.2.4. Rollover Trades

The pre-arranged trades as described in the above case study had the effect of rolling over a customer's outstanding position for the purpose of extending the settlement date and preventing forced sales. Rollover trades normally involve a set of on-market transactions, the effect of which is to postpone the final settlement of a position in a security, by closing an existing unsettled transaction and entering into a transaction which creates an equivalent position but for settlement on a later date.

Rollover trades can be legitimate if the sale and buyback involved in the particular rollover are subject to genuine forces of market demand and supply. In other words, each leg of the rollover trade must be competitively executed with an independent market participant on the open market and subject to market risk.

Rollover trades which have been pre-arranged may lead to a false market, particularly if they are conducted in less liquid securities. In the case study, SGX's assessment did not stop at the fact that the 2 TRs were merely engaging in rollover trades to extend the settlement date of their customers' positions. SGX went on to consider whether a false or misleading appearance or false market was created due to the way the rollover trades were being carried out as a whole, including its duration.

3.2.5. SGX's Concerns with Pre-Arranged Trading

SGX-ST Rule 13.8.1 is concerned with the objective assessment of whether a false or misleading appearance or false market has been created. What is important is the effect on the market, regardless of the intention of the TR (i.e. it does not matter whether the TR intended for his orders and trades to lead to a false or misleading appearance or false market, or knew that he was in fact creating a false market).

Therefore, SGX expects market participants to be mindful of the distortive effect that pre-arranged trading may have on the market, taking into consideration that:

(i) The execution of crossings between the same parties for the same volumes (which are subsequently reversed at the same prices), will raise questions of whether the transactions involved a change in beneficial ownership, or are for rollover of trades to extend settlement, or for a purpose of engaging in a circular trading scheme to create the impression of turnover.

(ii) Pre-arranged trades which are consistently executed at a targeted price range would inevitably have the effect of artificially maintaining the share price.

(iii) A protracted pattern of pre-arranged trading which accounts for a significant proportion of the market volume (particularly in illiquid securities) will mislead and deceive the investing public as to the accurate interest in the security since the market volume has been artificially interfered with.

3.3. Case 3: Trading Practices and Conduct in the Securities Market

3.3.1 Overview of Standard of Conduct

Good trading practices underpin a fair, orderly and transparent market and promote market integrity. In particular, a fair market is one that is characterised by proper trading practices, and the smooth and efficient functioning of the securities market depends heavily on the professional standards and integrity of those who are engaged in it.

Members and TRs act as "gatekeepers" of the securities market by managing the point of entry for market participants. Their important role means that they must have a high standard of conduct so that the interest of the public and the investing community is protected as a whole. This expectation is also reflected in SGX-ST Rule 13.8.1 where Members and TRs are prohibited from engaging in any course of conduct that is likely to create a false or misleading appearance.

In accepting customers' orders and instructions, it is also important for Members and TRs to exercise due professional skill, care, and diligence to not carry out trading that will either interfere with the free forces of market supply and demand, or that is not based on genuine trading or commercial intention.

3.3.2 Case Study on Customer's Orders Which May Be Potentially Manipulative

The following case study does not represent an actual case referred to the SGX-ST DC but is provided for illustrative purposes only.

About an hour after the market opened for trading, TR A received instruction from Customer A to purchase 4 million shares in an illiquid security, at a limit price of $0.50 in the shortest time possible. TR A was specifically instructed by Customer A to repeatedly place large buy orders to instantaneously trade with resting sell orders at several price levels.

Prior to TR A's entry into the market, the volume-weighted average price of the security was $0.13. The total traded volume in the security was 170,000 shares, with a last traded price of $0.14. The closing price of the security in the prior week was between $0.10 and $0.12, and the daily traded volume ranged between 50,000 and 300,000 shares.

TR A first entered a buy order for 300,000 shares at $0.18, clearing the sell queue from $0.14 (i.e. best ask price) to $0.18. Consequently, the share price increased by 40 bids, from $0.14 to $0.18 instantaneously.

Seconds later, TR A entered another buy order for 200,000 shares at $0.20, clearing the sell queue from $0.18 (i.e. best ask price) to $0.20. As a direct result of TR A's actions, the share price surged by 20 bids to $0.20.

In order to achieve Customer A's objectives, TR A continued to enter large buy orders in an aggressive manner. The subsequent buy orders were entered at increasingly higher prices and larger quantities, and in rapid succession.

During this period of the ramp up, TR A received further instructions from Customer A to intermittently enter sell orders at $0.45 or better, while he continued to work the buy order.

Within 30 minutes of TR A's entry into the market, his successive sweeping of the sell queue at rising prices caused the share price to surge from $0.14 to the intra-day high of $0.50 (or by approximately 250%). During this period, TR A's aggregate purchases of 4 million shares accounted for almost 70% of the total traded volume, and the volume-weighted average price also increased to $0.45. The surge in trading activity during this period inevitably enabled Customer A to successfully dispose of 3 million shares at the target price levels.

Following the cessation of TR A's aggressive buy trades for Customer A, the share price began to decline steadily and fell to $0.28. At this juncture, TR A received instruction from Customer A to purchase another 500,000 shares at the same limit price of $0.50. Similarly, TR A was also instructed to intermittently enter sell orders at $0.40 or better, to take advantage of liquidity accumulating at those levels, with the aim of fully liquidating Customer A's purchases on that day.

Without much hesitation, TR A proceeded to execute Customer A's instructions using the same *modus operandi*, i.e. entering successive buy orders to prop the share price back up to $0.50. As TR A's aggressive buy trades and ramping caused a second spike in the price and volume, Customer A's sell orders were successfully filled by other market participants. Upon squaring off Customer A's long position at a profit, TR A promptly exited the market.

Shortly after TR A's exit, the security reverted to its previous trading level for the rest of the day. In TR A's absence, the security eventually closed at $0.20, a significant decrease of 300 bids from the intra-day high of $0.50.

3.3.3 Relevant Considerations in Assessing Customers' Orders

When assessing potential breaches of SGX-ST Rule 13.8.1, SGX may take into account the factors listed under SGX-ST Rule 13.8.2 in determining whether a course of conduct is likely to create a false or misleading appearance. SGX's assessment is conducted on an objective basis, and the factors listed in SGX-ST Rule 13.8.2 are not meant to be exhaustive and would not be considered in isolation.

In particular, Members and TRs may consider the following non-exhaustive factors when assessing customers' orders:

(i) **Volume-weighted average price:** Whether the execution of the order or series of orders would result in a significant change in the price (which is inconsistent with the recent trading activity in the security, including the intra-day, daily, weekly or monthly price range) and represent a significant proportion of the daily traded volume in the security. In the case study above, TR A ought to have taken stock of the prevailing market conditions as he sought to fulfill Customer A's orders.

(ii) **Timing of order(s) and trades:** Whether the execution of order(s) is concentrated within a short time span. In the case study above, TR A should have been mindful that the speed and frequency in which the buy orders were executed, especially within a short time span, would cause the share price to surge to disproportionate levels. It would be of greater concern if the orders were to be executed around a specific time when reference prices, settlement prices and valuations are calculated.

(iii) **Order book depth and overall market liquidity:** Whether the size of the order or cumulative orders may be disproportionate or excessive relative to the depth of the order book and liquidity of the market at the material time. In the case study above, TR A should have sought to understand Customer A's motivation for trading in that manner, in particular, the aggressive buy orders coupled with the intermittent entry of sell orders at higher prices.

3.3.4 Recommended Best Practices

As seen in the case study above, when faced with potentially manipulative activities arising from their customers' orders which may appear to have contravened SGX-ST Rule 13.8.1, Members and TRs may consider the following practices:

(i) **Recommend Alternate Trading Strategy:** When faced with an order which may cause adverse market impact when executed at one go (e.g. excessively large order quantity when compared to the order book depth), Members and TRs can consider recommending an alternate trading strategy, such as spreading the orders over a longer time period to minimise any price or volume aberrations. Should the prevailing market conditions not allow the fulfillment of the customer's target quantity, Members and TRs should inform the customer that the order may not be completely fulfilled within a single day and provide the reasons for recommending an alternate trading strategy.

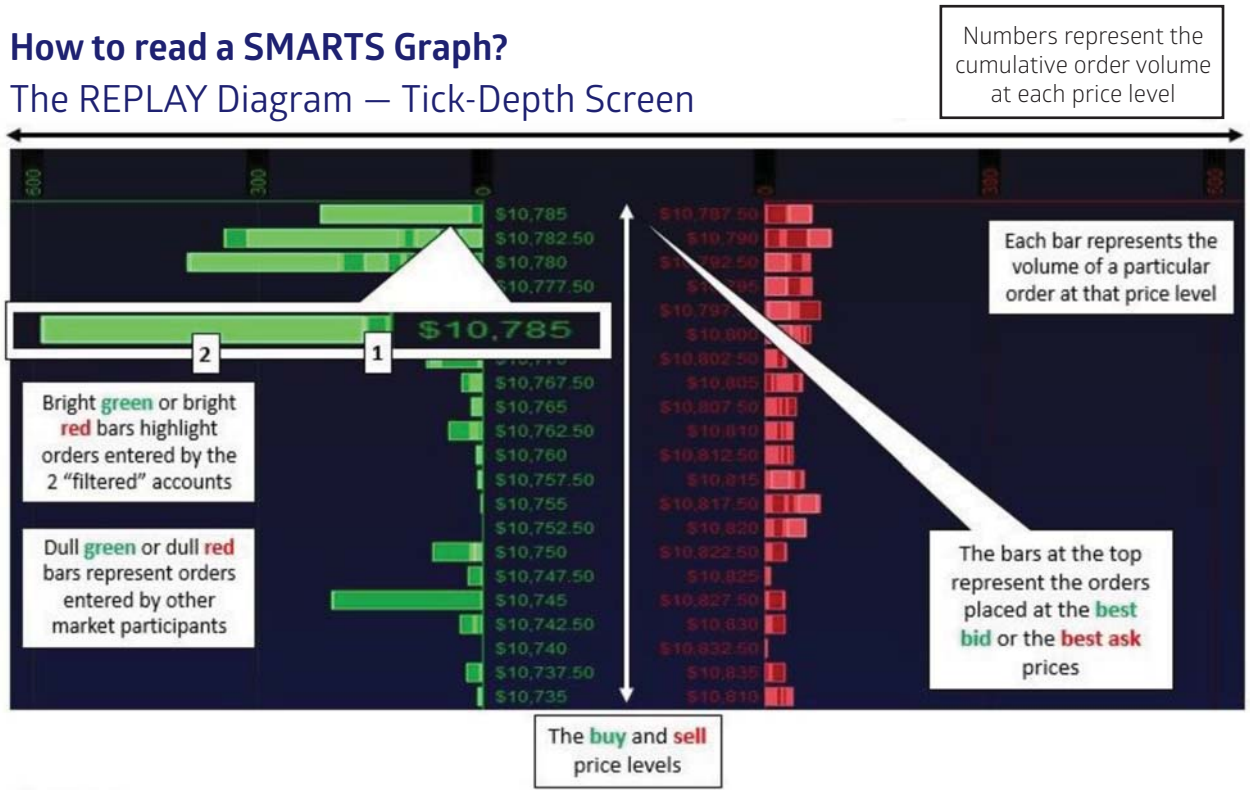
(ii) **Escalation to Compliance/Supervisor:** When the customer is trading in a manner that does not appear to be in his best interests or is unusual in light of the customer's previous trading patterns or may have caused adverse market impact, Members and TRs should enquire on the reasons for the orders given and/or the trading strategy involved, in order to satisfy themselves that the orders were executed for a legitimate commercial purpose and not for any ulterior motive. If in doubt, there should be proper escalation of such concerns to higher management and Compliance for further consideration. Where necessary, the matter should be reported to the Exchange as required under SGX-ST Rule 13.8.8.

(iii) **Be Prepared to Reject Customers' Orders:** A suspicious order or transaction is one where there are "reasonable grounds" to suspect that it might constitute market misconduct, such as insider trading or market manipulation. Members and TRs should be familiar with the securities that they trade in. In circumstances where the customers' orders give rise to suspicions of potentially manipulative activities, Members and TRs should be prepared to reject the customers' orders, when necessary.

Appendix

4.1. Explanatory Notes on Charts

The below SMARTS module shows the REPLAY Tick-Depth Screen.



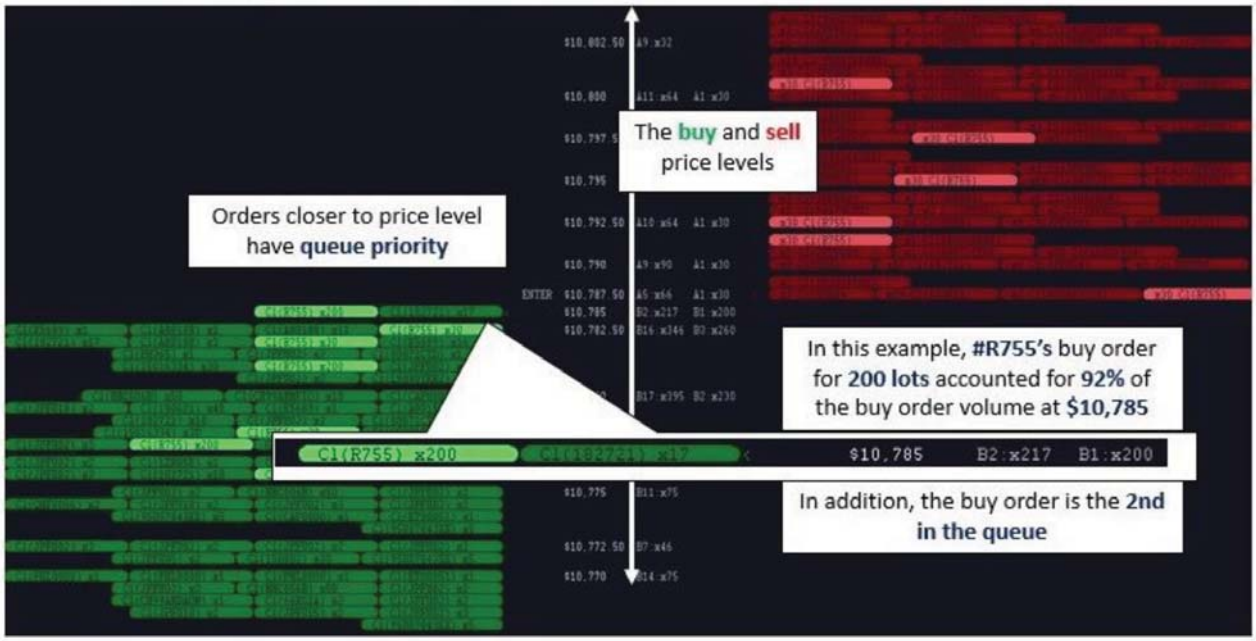
The green portion of the graph represents the buy side of the order book and the red portion represents the sell side of the order book.

- The numbers at the top of the tick-depth screen represent the cumulative volume of this contract queuing at each price level. Here, you can see it being represented as 300 and 600 lots.
- The numbers in the middle of the graph indicate the respective buy and sell price levels.
- Each bar on this graph represents the volume of a particular order at that price level.
- The bars right at the top of the screen represent the orders which are placed at the best bid or best ask price.
- The bright bars represent the orders which were filtered with a particular account number, e.g. Trader A's trading account.
- The dull coloured bars represent orders entered by other market participants.
- For illustration, we shall examine the price level at $10,785. There are two orders queuing at this price level. Trader A's buy order is seen at bright bar numbered "2", i.e. 2nd in queue. The buy order volume is noticeably larger (given the longer bar) than the other buy order at the same price level.

The below SMARTS module shows the REPLAY Left-Right Trade Screen.

How to read a SMARTS Graph?

The REPLAY Diagram — Left-Right Trade Screen



The REPLAY Left-Right Trade Screen is particularly important to discern order priority.

- Similar to the REPLAY Tick-Depth Screen, the numbers in the middle of the graph, following the white arrow, indicate the respective buy and sell price levels.
- Each order is distinguished by a block. The trading account and quantity of shares attached to any given order are indicated on the block. Pertinently, the closer the order block is to the price level denotes its priority in the queue.
- For illustration, we shall examine the price level $10,785 and there are three observations which can be made here:
    - The first observation is that Trader A entered a buy order for 200 lots, as indicated by the bright highlighted bar.
    - The second observation is this: B2 indicates that there are a total of two buy orders in the market at this price level and the two buy orders totalled 217 lots. B1 indicates that the filtered trading account, in this case, Trader A's account, had entered one order for 200 lots. What should be immediately apparent is that Trader A's buy order was 200 out of a total of 217 lots. In other words, Trader A's buy order accounted for 92% of the total buy order volume at $10,785.
    - Lastly, Trader A's buy order is also the second in the queue, as the order block is further from the price level.

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