Response to SEBI's Discussion Paper:
Review of policy for trade cancellation/annulment

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In recent times, Indian stock exchanges have witnessed instances of large erroneous orders that were partially executed before they could be stopped. In a few cases, such errors have led to trading being halted on the exchanges. In response to repeated episodes of such freak trades, the Securities and Exchange Board of India (SEBI) has proposed a new policy for trade annulment in the Discussion Paper titled "Review of policy for trade cancellation / annulment".[1]

In the global debate on how regulation should resolve the cost of such market disruptions, two suggestions are often considered: trade annulment and/or price reset under some exceptional circumstances.[2] While the former attempts to address the situation by cancelling trades that happened between two parties, the latter involves calculating a new *determined price*.[3] SEBI's discussion paper proposes that a request for trade annulment can be entertained in exceptional situations.

This response note evaluates SEBI's proposal using the following perspectives:

a) *What is the market failure that is to be solved?*

b) *Do we know that this market failure exists in India today?*

c) *Is solving this market failure consistent with the goals of SEBI regulation?*

d) *What is the proposed intervention?*

e) *Is this intervention within SEBI's powers?*

f) *Does the proposed intervention solve the claimed market failure?*

g) *Do the benefits outweigh the costs?*

[1] http://www.sebi.gov.in/cms/sebi_data/attachdocs/1381312419464.pdf

[2] The SEBI discussion paper lists fraud, market manipulation, regulatory action, and erroneous trades as the cases of exceptional situations.

[3] For example, a value weighted adjusted price could be used.

a) *What is the market failure that is to be solved?*

Price movements arising out of erroneous trades, market manipulation, or fraud hurts the quality of prices discovered by the markets. Such a distortion of prices is a negative externality, where the action of one trader imposes a significant cost on all other market participants. When there is a high incidence of such events, it can be considered a market failure.

For example, consider the case of an erroneous order arising from a bug in the trading software system of a securities firm. If the firm fails to deploy proper risk management procedures before executing orders, and causes a disruption in the price, it hurts not just the firm but other market participants as well.

This problem is analogous to issues of industrial safety where a failure occurs because the firm does not have enough incentive to deploy adequate safety measures. The Bhopal gas tragedy in 1984 is an example of such a failure. The gas leak accident at Union Carbide India Ltd. caused several deaths and affected many thousands of people. The failure of the firm to deploy enough resources to develop a safety mechanism to avoid such a catastrophe. Free markets do not automatically correct such market failures, and regulation needs to step in to ensure that similar failures do not recur.

Similar problems arise when a trading firm fails to deploy best trading practices in their trading systems. This could happen out of a deliberate act of market manipulation/fraud (where one's conduct hampers the ability of all others to make informed decisions) or due to punching/software errors.

b) *Do we know that this market failure exists in India today?*

Yes, the SEBI document provides evidence by way of several instances of extreme price movements due to erroneous orders / trades in the Indian equities markets in the recent past.

c) *Is solving this market failure consistent with the goals of SEBI regulation?*

The Indian Financial Code (IFC) proposed by the Financial Sector Legislative Reforms Commission defines fraud as market abuse in Section 215(2) as:

> *A person commits market abuse if the conduct of such person is intended to interfere with free and fair operation of the securities market by, hampering the ability of persons to make informed decisions in relation to dealing in securities,*

and is carried out to make a financial gain and includes criminal market abuse.

Price movements that arise either out of market manipulation or erroneous trades interfere with the free and fair operation of the market. Since Section 11(1) of the SEBI Act, 1992 states investor protection as one of SEBI's objectives, dealing with this market failure, that interferes with the price discovery process of the market, falls within SEBI's mandate.

d) *What is the proposed intervention?*

SEBI has proposed that exchanges should consider trade annulment and/or price reset under exceptional circumstances.

e) *Is this intervention within SEBI's powers?*

Section 11B of the SEBI Act, 1992, grants SEBI the power to issue directions to exchanges. However, the IFC does not give this power to the regulator. The IFC gives power to punish the offender under Section 415(1).

f) *Does the proposed intervention solve the claimed market failure?*

No, the proposed regulation does not solve the claimed market failure, and can instead impose significant costs on society, as follows:

1. *Potentially increases the occurrence of such instances*: Provision for trade annulment/price reset introduces a moral hazard problem. With such an option in place, traders will no longer be concerned about the risk quotient of algorithms or trading systems before entering new orders. This could result in an increase in the number of such events in the market, leading to serious consequences. When the trader is left to bear the cost for their mistakes, it effectively ensures that they undertake adequate levels of risk management at their own firm.

2. *Potentially deters market stabilising trading strategies*: Two types of trading strategies help markets recover around extreme events. First, strategies that place orders far away from the touch, and second, presence of active traders who realise the trading error and come into the market to take opposite position.[4] These strategies are often undertaken with high risk, and trade annulment might

[4] "Cancelling trades on an exchange: When is it a good idea?", Ajay Shah, October 13, 2012 http://ajayshahblog.blogspot.in/2012/10/cancelling-trades-on-exchange-when-is.html

act as a deterrent to these traders. Markets should be made more resilient to such shocks instead.[5]

3. *Scope for trading strategies that take advantage of trade annulment policies*: It is humanly difficult to ascertain whether trade cancellation requests are made in good faith. A manipulative scheme among trading members can take advantage of this policy for their own benefit. As an example: suppose that three traders – A, B, and C – decide ex-ante to take positions and then cancel them post trade by mutual agreement. When these trades are cancelled, C can have made profit out of the movement in prices because of the positions taken by A and B.

g) *Do the benefits outweigh the costs?*

Apart from the costs already discussed in the previous section, the operational cost of trade annulment will be considerable. Finding each and every order which was traded during such incidents induces significant cost on the exchange. Cancelling them imposes substantial cost on other market participants.

The only beneficiaries of trade annulment policy is the offending party.

What can SEBI do?

There are three areas where regulation has a role to play in the issues raised in this note:

1. *Preventing the occurrence of such trades in the future*

A useful framework to understand the role of regulation in the resolution of erroneous trades may be to consider the securities firm as the producer of high quality trading software system. This firm invests x resources into making this system, where $f(x)$ is the defect rate of orders coming out of the software. The objective of the firm is to minimise the defect rate. The firm is profitable when it can charge for the use of the trading system at a rate higher than the cost of production. Based on its own interests, the optimal amount of resources that the firm chooses to deploy is x^*, where the trading system generates a defect rate of $f(x^*)$.

The above argument holds only when the producer pays for *all* the costs incurred in the production process. For example, in the case of industrial safety problem that led to the Bhopal gas tradegy, Union Carbide

[5] "Preventing shocks or becoming resilient to them?", Ajay Shah, October 16, 2012 http://ajayshahblog.blogspot.in/2012/10/preventing-shocks-or-becoming-resilient.html

India Ltd. did not have an incentive to deploy adequate safety mechanisms because the cost of the tragedy was incurred by the population around the plant rather than a direct cost to the firm. This outcome is clearly inefficient. To prevent such negative externalities, the firm must incur an *explicit* cost of these outcomes upfront and deploy enough resources into building adequate safety mechanisms.

Similarly, when the securities firm chooses optimal x^*, it only considers its own interests. If the costs of screening the orders become the responsibility only of the exchange, all market participants will pay more (by way of higher exchange fees) and the securities firms will continue to under-invest on writing high quality systems. This is akin to an outcome where the air is polluted and everyone buys a gas mask, and is an inefficient outcome.

How can regulation help resolve the problem of better incentivising markets? A possible solution is the *imposition of a penalty* if the firm fails to put in place proper risk management procedures to prevent market disruption. Here, the external cost imposed to the society by the firm is internalised and ensures that the firm will take sufficient preventive measures to avoid such an accident in the future.[6]

The penalty should be such that the securities firm should rather deploy x^* in order to build bug free software, and should be in accordance with the cost the firm imposes on rest of the participants. A recent example is when Knight Capital was fined by the Securities and Exchange Commission (SEC) for not following good software practices. A bug in the trading software system of the firm resulted in numerous wrong order submissions on the New York Stock Exchange trading platform and resulted in disruption of 148 stocks prices. In this regard, the firm was fined $\$12$ million by the SEC for violating the market access rule.[7]

For market abuse on the other hand, the IFC proposes three types of penalties under Section 220:

(a) Withdrawal of permission to trade.

(b) Fines.

(c) Imprisonment for criminal market abuse.

2. *Do we need trade annulment in addition to penalties?*

   Globally, trades are annulled only if the price movements are beyond

[6] Economists refer to this as the Pigouvian tax. Reference: "The Economics of Welfare", A. Pigou, 1920.

[7] http://www.sec.gov/litigation/admin/2013/34-70694.pdf

certain thresholds. Indian exchanges already have such hygiene checks in the form of price bands (or client/broker level trade limits) that should not allow large price movements beyond such thresholds. If such mechanisms fail to function around such times, the exchange should be held responsible for it.

Exchanges are responsible for maintaining and running perfectly functional systems. The systems should guarantee functionality, and the exchange should have a service level agreement (SLA) with the investors for all the services it is providing. Any failure in a service should be considered a breach of contract between the exchange and the investor, and the exchange should be penalised subject to the terms of the contract.

The primary assurances to the investors by the exchange should be:

- Confirmed entry of orders into the trading system of the exchange by way of acknowledgement within a specified period of time. Acknowledgement should be provided for execution of order or entry into the order book if it was not executed.
- Following of price-time priority for order execution.
- Timely invocation of circuit breakers for halting trading when the price bands are breached.

Any exception to these rules should be strictly dealt with.

3. *The role of circuit filters when there are erroneous trades on the index*

   Special consideration is required for erroneous orders / trades on the index because large movements in the index value can trigger market wide halts, and adversely affect all participants.

   However, the current rules governing circuit filters do not address this issue adequately. The present rules require exchanges to implement an index based market wide circuit breaker system which will affect a coordinated trading halt in all equity and equity derivative markets when the index moves 10%, 15% and 20% either way.

   Under these rules, *all* markets should halt irrespective of whether the index movement is due to an information event OR an error trade. If there is extreme price movement due to an information, a halt across the markets could be warranted. would generally trigger price changes across all the exchanges. However, the same rationale does not hold for an erroneous trade. For example, an error on Nifty index will only affect the NSE spot market.

This leads to the following questions on rules for circuit filters:

(a) Should there be a different process on market halts when there is a large movement because of "information" versus "trading error"?

(b) How should the distinction between the two price movements be made?

(c) How the process should be designed so that the impact of the error on *all* markets and market participants is *minimised*?