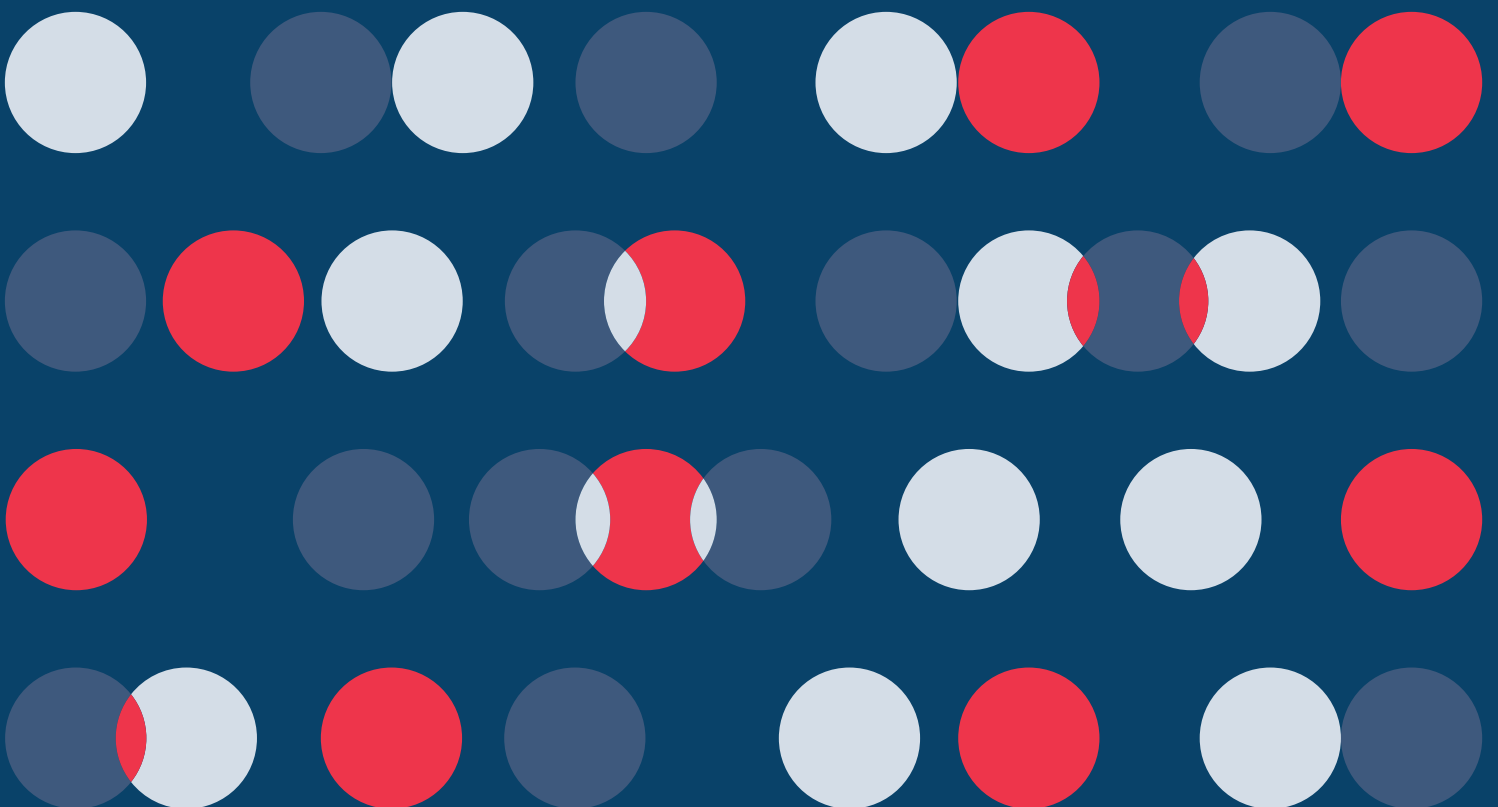# TRADING MECHANISM OF VOLATILITY CONTROL MECHANISM (VCM) IN THE SECURITIES MARKET

NOTE TO THE READER:

This paper is compiled based on the concluded consultation model and the relevant Rules of the Exchange ("Rules") for the VCM. It aims to facilitate understanding of investors and traders about the VCM mechanism. While due care has been taken to provide accurate and up to date information, the paper is for general reference only and if any discrepancies or inconsistencies with the Rules are found, the meanings in the Rules shall prevail. HKEX and its subsidiaries shall not be responsible or liable for any loss or damage, directly or indirectly, arising from the use of or reliance upon any information provided in this document.
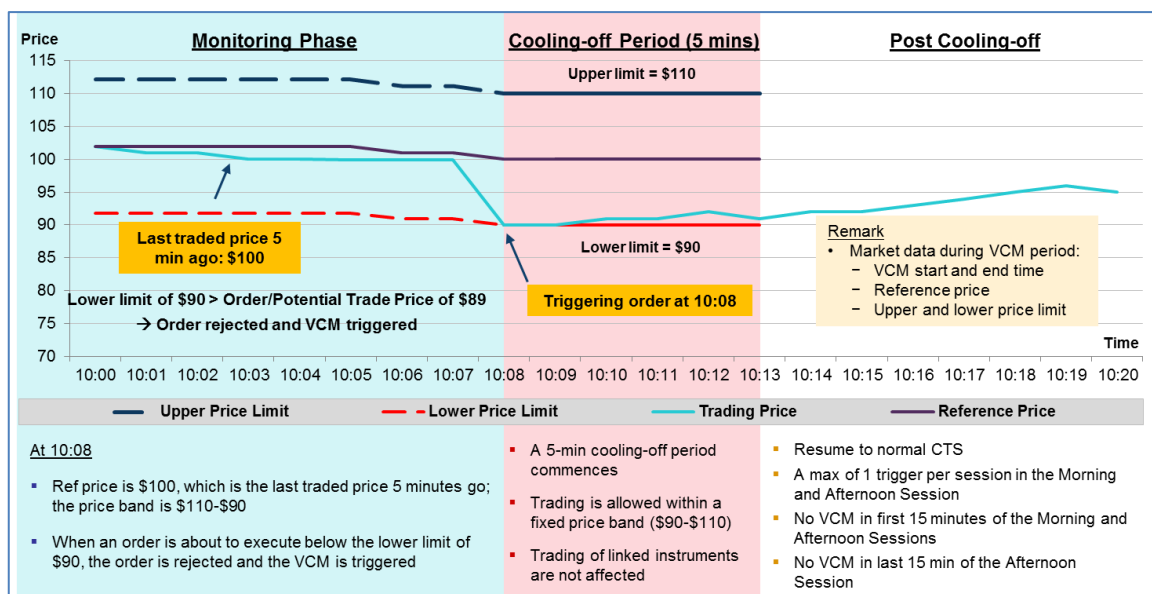
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# 1. Background

The VCM is based on the regulatory guidance of the Group of Twenty (G20) and International Organization of Securities Commissions (IOSCO), and is designed to prevent extreme price volatility from trading incidents such as a "flash crash" and algorithm errors, and to address systemic risks from the inter-connectedness of securities and derivatives markets. Many international exchanges have implemented some form of volatility control mechanisms to control extreme price volatility.

In the case of HKEX's VCM, if the price deviates more than a predefined percentage within a specific time frame, it will trigger a cooling-off period for five minutes. This provides a window allowing market participants to reassess their strategies, if necessary. It also helps to re-establish an orderly market during volatile market situations.

The VCM for the securities market is planned to be implemented on 22 Aug 2016, after the stabilization period of the Phase 1 rollout of the Closing Auction Session (CAS), and will cover all Hang Seng Index (HSI) and Hang Seng China Enterprise Index (HSCEI) constituent stocks (81 stocks in July 2016).

# 2. Overview of VCM Model

HKEX has adopted a dynamic price limit VCM model for the securities and derivatives markets, which would trigger a cooling-off period in case of abrupt price volatility detected at the instrument level. It would also focus on instruments that pose systemic risks arising from the inter-connectedness of securities and derivatives markets, particularly with respect to index products. This model is adopted because it is relatively simple and minimises market disruption.

The diagram shows a price chart with three phases: Monitoring Phase, Cooling-off Period (5 mins), and Post Cooling-off.

**Monitoring Phase**

Last traded price 5 min ago: $100

Lower limit of $90 > Order/Potential Trade Price of $89
→ Order rejected and VCM triggered

**Cooling-off Period (5 mins)**

Upper limit = $110

Lower limit = $90

Triggering order at 10:08

**Post Cooling-off**

Remark
• Market data during VCM period:
  − VCM start and end time
  − Reference price
  − Upper and lower price limit

Legend: Upper Price Limit — Lower Price Limit — Trading Price — Reference Price

**At 10:08**
- Ref price is $100, which is the last traded price 5 minutes go; the price band is $110-$90
- When an order is about to execute below the lower limit of $90, the order is rejected and the VCM is triggered

- A 5-min cooling-off period commences
- Trading is allowed within a fixed price band ($90-$110)
- Trading of linked instruments are not affected

- Resume to normal CTS
- A max of 1 trigger per session in the Morning and Afternoon Session
- No VCM in first 15 minutes of the Morning and Afternoon Sessions
- No VCM in last 15 min of the Afternoon Session

- For the securities market, the VCM is triggered if the price of a VCM security is deviated more than ±10% away from the last traded price 5-min ago; A 5-min cooling-off period will start.

- During the cooling-off period, trading is allowed within a pre-defined price band.

- Normal trading without restriction will resume after cooling-off period.

# 3. Instruments covered under the VCM

In the securities market, VCM will only be applied to Hang Seng Index (HSI) and Hang Seng China Enterprises Index (HSCEI) constituent stocks (together the VCM securities). Currently, there is no plan to include more securities in the securities market which will be subject to the VCM.

# 4. Publication and Maintenance of the List of VCM Securities

Before VCM for the securities market is implemented on 22 August 2016, the finalized list of the VCM securities will be published on the HKEX website.

Any addition of constituent stocks to the HSI or HSCEI subsequently will also be added to the list of VCM securities on the effective date of the addition.

Similarly, any deletion of constituent stocks from the HSI or HSCEI will also be removed from the list VCM securities on the effective date of the deletion.

# 5. Monitoring Phase of the VCM

The VCM is only applicable to board lot order input during certain periods of the Continuous Trading Session (CTS) (more details below), but not for any order input during the Pre-opening Session (POS) and the CAS.

During the CTS, the potential trade price of a VCM security will be continuously checked against a dynamic price limit of ±10% based upon the reference price, which is the last traded price 5 minutes ago.

**Periods during the CTS when VCM Monitoring will not be Applied**

- *Market Open* - The VCM monitoring is not applied at the first 15 minutes of the Morning and Afternoon CTS to allow free price discovery at the beginning of the CTS after a trading break.

- *Afternoon CTS* - The VCM monitoring is not applied at the last 20 minutes[1] of the afternoon CTS in order to ensure that there is an uninterrupted trading period (not interfered by an cooling-off period) during the last 15 minutes of the last CTS of the day.  This can also allow investors to unwind their day positions and avoid taking overnight risks.

# 6. Cooling-Off Period

During the CTS, the potential trade price of a VCM security will be continuously checked against a dynamic price limit of ±10% based upon the reference price, which is the last traded price 5 minutes ago.

If the potential execution price will be outside the above-mentioned price limit, the order concerned will be rejected and a 5-minute cooling-off period will be triggered immediately.

**Maximum Number of VCM Triggers**

For each VCM security, there will be a maximum of <u>one</u> VCM trigger in each trading session (Morning Session and Afternoon Session are counted as two separate trading sessions).  When normal trading has been resumed after the

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[1] Since a cooling-off period will last for 5 minutes, the monitoring will stop 20 minutes before end of afternoon CTS.

VCM, there will not be any VCM monitoring within the same CTS.

**Trading within a Fixed Price Band**

During the 5-minute cooling-off period, the VCM security can continue trading but will only be allowed to trade within a fixed price band (±10% from the reference price).

**Order Handling when VCM is triggered**

| If VCM is Triggered Due to Potential Trade Price > Upper Price Limit | <ul><li>AMS/3 will reject the buy/sell order (i.e. the incoming order) that triggered the VCM and no trade will be executed</li><li>AMS will also cancel the existing high price buy orders (i.e. those with buy price > upper price limit) that queued in the buy order queue</li><li>All the existing sell orders will remain in the order queue no matter if their prices are higher than the upper price limit, and will not be cancelled by AMS/3</li></ul> |
|---|---|
| If VCM is Triggered Due to Potential Trade Price < Lower Price Limit | <ul><li>AMS/3 will reject the buy/sell order (i.e. the incoming order) that triggered the VCM and no trade will be executed</li><li>AMS will also cancel the existing low price sell orders (i.e. those with sell price < lower price limit) that queued in the sell order queue</li><li>All the existing buy orders will remain in the order queue no matter if their prices are lower than the lower price limit and will not be cancelled by AMS/3</li></ul> |

**Order Handling during the Cooling-off Period**

Any incoming aggressive orders (i.e. buy order > upper price limit and sell order < lower price limit) outside the fixed price band will be rejected by AMS/3 immediately.

Passive orders (i.e. buy order ≤ upper limit and sell order ≥ lower limit) will still be

accepted by AMS/3 to allow building of liquidity.

**Cooling-off Period will not be Brought Forward to Next Trading Sessions**

If the Morning Session closes before the end of a cooling-off period (e.g. a cooling-off period starting at 11:56), the remaining time of the cooling-off period will not be brought forward to Afternoon Session.

# 7. Post Cooling-Off Monitoring

After the cooling-off period, trading in the CTS will resume to normal. Since there will only be a maximum of one VCM trigger per VCM security per trading session, no further VCM price monitoring will be imposed on that VCM security after a cooling-off period for the remainder of that trading session.

# 8. Determination of the VCM Reference Price

The reference price of the VCM is the price of the last automatch trade 5 minutes ago, and this being a dynamic price, captures both the magnitude and speed of price changes of individual VCM securities.

The VCM monitoring starts at 9:45am for the securities market. The first reference price for the trading day should be the last traded price executed 5 minutes before 9:45am. Thereafter the reference price will be updated by AMS/3 at the end of each one minute interval.

It should also be noted that the reference price established during the Morning Session will not be brought forward to Afternoon Session.

**If there was no trade execution 5 minutes ago**

For the Morning Session at 9:45am, if there was no trade execution 5 minutes before, AMS/3 will further search backward in time for the latest last traded price as the reference price. This search can go backward till the market open where the auction price established during the pre-opening auction will be used as the reference price.

In case there is no trade execution from market open to 5 minutes before the start of the VCM monitoring, AMS/3 will use the first traded price executed in the Morning Session as the reference price until there is a subsequent execution.

For the Afternoon Session at 1:15pm, if there was no trade execution 5 minutes

before, AMS/3 will further search backward in time for the latest last traded price as the reference price.   This search can go backward till the market open of the Afternoon Session.

In case there is no trade execution from market open of the Afternoon Session to 5 minutes before the start of the VCM monitoring, AMS/3 will use the first traded price executed in the Afternoon Session as the reference price until there is a subsequent execution.

## 9. Quotation Rule and Price Warning During Cooling-off Period

The price checking in relation to 24 spreads rule and 9 times rule will still be applicable as usual during the VCM cooling-off period.

The existing price warning mechanism (i.e. if trader submit an order to AMS/3 with this warning checking turned on, AMS/3 will return a warning message to the trader when the order price is set at 21 spreads or more away from the nominal price) will also applicable during the VCM cooling-off period.

## 10. Adverse Weather Arrangements

### Delay Open of Securities Market due to Bad Weather

In the case that market open is delayed due to bad weather (e.g. hoisting of typhoon signal no.8 or above or issuance of black rainstorm warning), similar to the normal market open, the first 15 minutes after market open will not be subject to the VCM monitoring.

### Early Close of Securities Market due to Bad Weather

In the case of an early close of the market due to bad weather (e.g. hoisting of typhoon signal no.8 or above during trading hours), cooling-off period can still be triggered in the last 15 minutes before market close and can continue until market close.

## 11. Additional Market Data Dissemination for VCM

Additional market information will be disseminated on HKEX Orion Market Data Platform for Securities Market (OMD-C) to provide transparency of the VCM to the market.   Such information includes a new indicator to identify VCM securities

and the details of each cooling off period triggered by the VCM.

Before the start of a trading day, the OMD-C message for providing reference data will indicate whether a security is eligible for VCM or not on that day by a newly introduced VCM security indicator.

Once a cooling off period is triggered by the VCM, the details of the cooling off period, including the stock code of the security concerned, the reference price, the lower price limit, the upper price limit, the start and end times of the cooling off period, will be disseminated immediately.

Reference price is only disseminated when a cooling off period is triggered. There is no reference price information in normal days where the VCM does not trigger any cooling off period.

## 12. Trading of Linked Instruments

All VCM securities will be treated independently, and therefore trading of its related or linked instruments (e.g. single stock options or derivative warrants) will remain unaffected when a VCM is triggered on a VCM security.

When a VCM security is under a cooling-off period, trading of its related instruments can continue without restriction.

## 13. Odd Lot / Special Lot Orders and Manual Trades

The VCM is only applicable for board lot order input during the CTS.

Odd lots / special lots orders and manual trades are not subject to VCM monitoring.

Input, amend, cancel of odd lot / special lot orders and input or reject of manual trades are allowed during VCM cooling-off period.

## 14. Securities Market Making (SMM) and Liquidity Provision

HKEX recognises that it may be difficult for market makers or liquidity providers to hedge when a VCM is triggered, since the VCM would impact their market making capability.

The current rules, regulations and procedures already make allowance for such situations. Per existing practice, the market makers or liquidity providers may request waiver or relaxation of their market making obligations.

## 15. Enquiries and Others

Market participants who would like to further understand the details of the VCM can refer to the following website, email accounts and hotline numbers:

| VCM webpages | http://www.hkex.com.hk/eng/market/sec_tradinfra/vcm_cas/vcm_cas.htm <br> http://www.hkex.com.hk/vcm/en/index.htm |
|---|---|
| Email | Securities Market: AMS3Info@hkex.com.hk <br> Market Data/OMD-C: IVSupport@hkex.com.hk |
| Hotline | Securities Market : 2840 3626 <br> Market Data/OMD-C : 2211 6558 |