



# Market Consultation on Volatility Control Mechanism & Closing Auction Session

HKEx Presentation  
January 2015



**1** Volatility Control Mechanism (VCM)

**2** Closing Auction Session (CAS)

# The World has changed in the past decade...

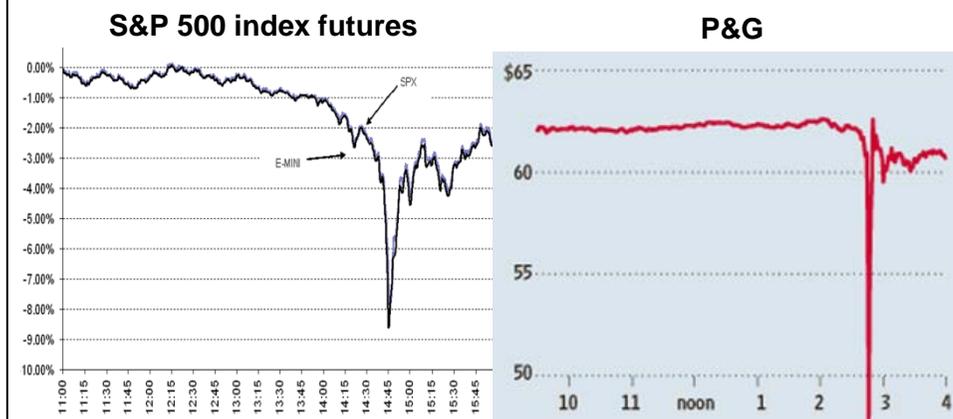
Electronic and automated algo trading are prevalent

Trading is faster, average trade size is smaller and the number of trades is increasing

Markets and products become more interconnected, with more hedging/arbitraging activities

→ There are more potential systemic risks threatening market integrity

## 6 May 2010 – Flash Crash in the US market



What happened:

- Extreme price fluctuation started in individual instruments...
- ...triggering adverse chain reaction due to interconnectedness of different asset classes and products...
- ...causing non-fundamental driven volatility in overall market
- ... leading to a loss in investor confidence and a series of regulatory and market reviews

Will this kind of major trading incident that hampers market integrity happen in Hong Kong?

# Why VCM?



## G20 & IOSCO\*

- Trading venues should have suitable VCM to deal with systemic risks arising from volatile market situations

## SFC

- Support HKEx to review VCM for safeguarding market integrity

## International Practice

- Major US, European and Asian markets have developed VCMs over time, but not Hong Kong

**It's our statutory duty to review VCM for safeguarding the Hong Kong market**

\* Based on: 1). the review called by the G20 in Nov 2010; 2). IOSCO's report on "Regulatory Issues Raised by the Impact of Technological Changes on Market Integrity and Efficiency" published in Oct 2011; and 3). the Joint Report from SEC and CFTC on Flash Crash.

# Common VCM models

Exchange	Type of VCM Model	Triggering Point	Process & Resumption	Consideration for the HK Market										
<b>US</b> All regulated exchanges	<b>Market-level Circuit Breaker</b>	7%, 13% and 20% drop in the S&P 500 Index	Suspend trading for all stocks in all market places for 15 minutes (7%, 13%) or for the whole day (20%)	✗ Significant impact by halting trading of the whole market										
	<b>Stock-level Dynamic Price Limit &amp; Trading Limitation*</b>	<table border="1"> <thead> <tr> <th>Type of Stocks</th> <th>Triggering %</th> </tr> </thead> <tbody> <tr> <td>Most liquid stock group &gt; \$3</td> <td>5%</td> </tr> <tr> <td>Less liquid stock group &gt; \$3</td> <td>10%</td> </tr> <tr> <td>\$0.75 ≤ stock price ≤ \$3</td> <td>20%</td> </tr> <tr> <td>Stock price &lt;\$0.75</td> <td>75% or \$0.15</td> </tr> </tbody> </table>	Type of Stocks	Triggering %	Most liquid stock group > \$3	5%	Less liquid stock group > \$3	10%	\$0.75 ≤ stock price ≤ \$3	20%	Stock price <\$0.75	75% or \$0.15	Multiple changes in trading method: 1. Trading within a price limit 2. Trading suspension 3. Auction 4. Back to continuous trading	✗ Model is too complex ✗ Require significant system changes
		Type of Stocks	Triggering %											
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Note: Rules vary for opening and close														
<b>Europe</b> LSE, etc.	<b>Stock-level Trading Limitation</b>	- 2 reference prices (auction price and last trade) - 10 different triggering levels for different securities	Switching from CTS to auction with random end and extensions	✗ Complex model with many trading suspensions (>100 triggers per day)										
<b>Mainland</b> SSE / SZSE	<b>Stock-level Static Price Limit</b>	10% from previous close	A stock cannot move beyond ±10% in a day	✗ Not conducive to price discovery ✗ Difficult to manage overnight risk										
<b>Singapore</b> SGX	<b>Stock-level Dynamic Price Limit</b>	10% from last trade 5 minutes ago for stocks > \$0.5	- Allow continuous trading as long as it is within the price limit - Multiple triggers allowed	✓ Relative simple model ✓ Recently introduced and well-received by the market										

**HK is one of only a few without a VCM; which type would fit HK best?**

\*Trading Limitation: Mechanism with trade suspension followed by auction trading and then resumption to CTS.

Note: the above information is based on publicly available sources. Please consult the relevant exchanges for more details or further updates if necessary.

## What for?

- Deal with systemic risk arising from inter-connectedness of multiple markets and products, particularly with respect to index products
- Provide a cooling-off period for participants to reassess their strategies and reset algo parameters, allowing an orderly market to be re-established

### Indicate that VCM should ...

- ✓ Offer temporary cooling-off period
- ✓ NOT set a fixed band for price movement (i.e. if a stock should drop or rise by significantly in a day, it would still be allowed to trade)

### But not necessarily a model to ...

- ✗ Set a daily price limit for stocks (e.g. the Mainland daily price limit model)
- ✗ Suspend trading of whole market (e.g. the US circuit breaker model)
- ✗ Prevent erroneous orders/trades

A simple and light-touch model is preferred as an important first step

# Which securities and derivatives should be included in the Hong Kong VCM model?

HSI, HSCEI and their index constituent stocks are systemically important and inter-linked

81 HSI and HSCEI index constituent stocks

Proposed VCM Instruments

<b>Equity Segment</b>	~ 60% ADT from HSI & HSCEI stocks
<b>Structured Products</b>	> 95% ADT from HSI & HSCEI indexes and stocks
<b>Derivatives Segment</b>	> 90% ADV from HSI & HSCEI related futures and options

Market	Applicable Instruments
<b>Securities</b>	<b>81 HSI &amp; HSCEI constituent stocks</b>
<b>Derivatives</b>	<b>8 index futures contracts</b> with HSI or HSCEI as their underlying index (i.e. HSI, HHI, MHI and MCH spot month & next calendar month contracts)

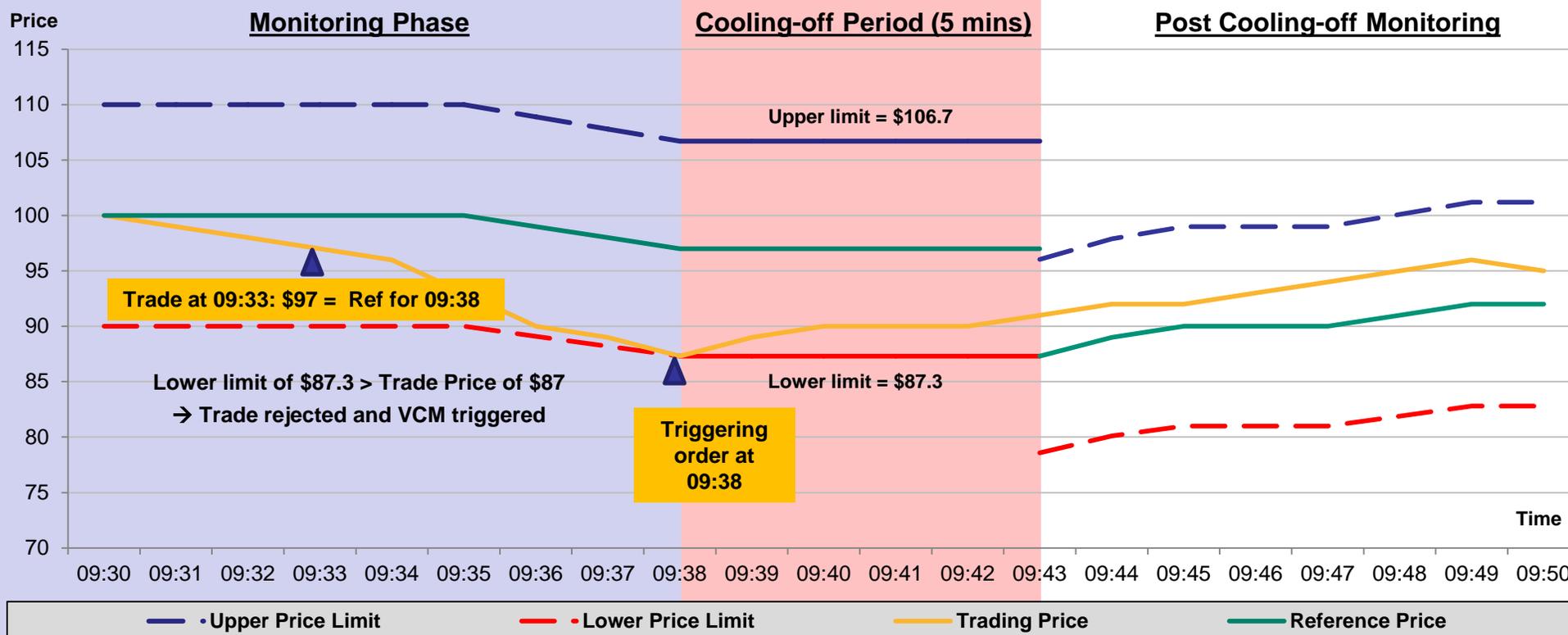
Focus on instruments with potential systemic risks → HSI & HSCEI related instruments

# Our proposed VCM model design

## Triggering Point

- **Triggering level:**  $\pm 10\%$  from the reference price for securities market  
 $\pm 5\%$  from the reference price for derivatives market
- **Reference price:** Last trade 5 minutes ago

## Illustrative example by using the trading of an applicable VCM stock during CTS (excluding last 15 minutes\*)



\* Since a VCM trigger will last for 5 minutes, the monitoring will stop 20 minutes before end of continuous trading session (CTS).

\*\* See Appendix 1 for illustrations of the VCM model when there is no trading during the cooling-off period.

## Monitoring phase

- Reference to a dynamic price (last trade 5-minute ago) to capture rapid and large price movements
- No VCM in the last 15 minutes of the Afternoon Session, to avoid causing overnight risk
- Maximum of two triggers in each trading session for each instrument (i.e. 2 in the Morning Session and 2 in the Afternoon Session) to minimize market interruption

## Cooling-off Period

- The cooling-off period would last for 5 minutes, and trading will resume to normal afterwards\*
- The triggered instrument would only be allowed to trade within price limit

\* See Appendix 1 for illustrations of the VCM model when there is no trading during the cooling-off period.

1 Volatility Control Mechanism (VCM)

2 Closing Auction Session (CAS)

## Why CAS?

- **Significant equity flow requires execution at the closing price (an investment mandate for many passive funds)**
  - ~10% of equity flow on a daily basis
  - 30%+ on index rebalancing days
- **Closing price is used for portfolio valuations and benchmarking**

## Issues without a CAS

- ✗ **Trades cannot be executed at closing price**
- ✗ **Tracking error for index funds → Higher transaction cost, and invest return hampered**
- ✗ **Exchange Participants (EPs) cannot execute at the closing price → Tension between EPs and investors**

**Meeting market demand for execution at closing price and index rebalancing**

# All developed markets except Hong Kong and most emerging markets have CAS



## All Developed Markets\* Except Hong Kong have CAS

### With CAS (22):

- |             |               |
|-------------|---------------|
| ✓ Australia | ✓ Japan       |
| ✓ Austria   | ✓ Netherlands |
| ✓ Belgium   | ✓ New Zealand |
| ✓ Canada    | ✓ Norway      |
| ✓ Denmark   | ✓ Portugal    |
| ✓ Finland   | ✓ Singapore   |
| ✓ France    | ✓ Spain       |
| ✓ Germany   | ✓ Sweden      |
| ✓ Ireland   | ✓ Switzerland |
| ✓ Israel    | ✓ UK          |
| ✓ Italy     | ✓ US          |

### Without CAS (1):

- ✗ Hong Kong

## Most Emerging Markets\* have CAS

### With CAS (20):

- |                   |                |
|-------------------|----------------|
| ✓ Brazil          | ✓ Peru         |
| ✓ Colombia        | ✓ Philippines  |
| ✓ Czech Republic  | ✓ Poland       |
| ✓ Greece          | ✓ Qatar        |
| ✓ Hungary         | ✓ Russia       |
| ✓ Indonesia       | ✓ South Africa |
| ✓ Korea           | ✓ Taiwan       |
| ✓ Mainland (SZSE) | ✓ Thailand     |
| ✓ Malaysia        | ✓ Turkey       |
| ✓ Mexico          | ✓ UAE          |

### Without CAS (4):

- |                  |         |
|------------------|---------|
| ✗ Chile          | ✗ Egypt |
| ✗ Mainland (SSE) | ✗ India |

**Without CAS, Hong Kong's competitiveness as an international finance centre is hampered**

\* Based on MSCI classification.

# CAS was introduced in May 2008 but was suspended 10 months later



## Introduction of the Previous CAS

Date	Events
Jul 2007	<ul style="list-style-type: none"><li>Introduced CAS based on positive consultation results</li><li>Closing auction model followed Pre-opening Session based on market feedback</li></ul>
26 May 2008	<ul style="list-style-type: none"><li>CAS launched</li></ul>

## Suspension of the Previous CAS

Date	Events
30 May 2008	<ul style="list-style-type: none"><li>5 days after launch, 21 stocks moved &gt;5% in the CAS on the day of MSCI rebalancing</li></ul>
Feb 2009	<ul style="list-style-type: none"><li>Consulted and concluded that a 2% price limit should be added to the CAS as the only price control measure (not implemented)</li></ul>
9 Mar 2009	<ul style="list-style-type: none"><li>HSBC stock price plunged 11% in the last few seconds of the CAS</li></ul>
23 Mar 2009	<ul style="list-style-type: none"><li>CAS suspended before the proposed price limit was implemented</li></ul>
May 2013	<ul style="list-style-type: none"><li>The trader who was suspected of causing the HSBC incident was not reprimanded*</li></ul>

**The previous CAS was suspended due to price instability**

\* See <http://www.sfc.hk/edistributionWeb/gateway/EN/news-and-announcements/news/doc?refNo=13PR51>

## Support

- ✓ **Strong demand for CAS to execute at closing price and minimise fund tracking error**
- ✓ **All investors including retail may benefit from the CAS**
- ✓ **Measures to prevent price instability are necessary for investor confidence**

## Concerns

- ✗ **Concern about large price movement and possible price manipulation in the CAS**
  - Improved CAS model (see next slide) and joint effort by the SFC and HKEx for enhanced market surveillance addresses the issue
- ✗ **Some investors may not understand and participate in the CAS**
  - Market education programme
  - Retail can also benefit from trading in the CAS (see slide 17)
- ✗ **Resource and time required for implementation**
  - If it goes ahead, adequate implementation lead time (1-year +) will be provided to the market

# New and improved CAS model to address price instability issue



Time	9:30-12:00; 13:00-16:00	16:00	16:01	16:08	16:10	16:12	
Session	Continuous Trading Session (CTS)	Closing Auction Session					
		Blocking Period (1 min)	Order Input Period (7 mins)	No-cancellation Period (2 mins)	Random Closing Period (2 mins)		
Description	Reference price based on the median of 5-snapshot nominal prices in the last minute of CTS	<ul style="list-style-type: none"> <li>Calculate &amp; publish reference price</li> <li>No Input, Cancel &amp; Amend</li> <li>Reject carried-over orders outside price limit</li> </ul>	<b>Price Limit:</b> <b>a</b> 5% of Reference Price	<b>b</b> Within lowest ask & highest bid			
			<b>Order Type Allowed:</b> At-auction Limit Order	At-auction Order		<b>At-auction Limit Order</b>	
			<b>Order Input, Cancellation &amp; Amendment:</b> Allowed Input, Cancel & Amend	Input Allowed, Cancel & Amend Not Allowed			

## Other New Measures:

- Better transparency by showing the IEP price limit, the 16:00 CTS closing and imbalance information (direction and quantity)
- Allow short selling orders subject to a tick rule (reference price)
- Allow matching of at-auction orders at the reference price when an auction price cannot be determined

Note: The day close of Stock Index Futures and Options in the derivatives market would be extended for 15 minutes, same as the previous CAS. To allow sufficient time for the market to prepare for AHFT's opening, which is 45 minutes after day close, the opening time of AHFT may be changed from 17:00 to 17:15, subject to the consultation feedback.

# New features of CAS

Features	Descriptions	Rationale
1. Price Limit	<ul style="list-style-type: none"> <li>1<sup>st</sup> stage: <math>\pm 5\%</math></li> <li>2<sup>nd</sup> stage: between highest bid and lowest ask</li> </ul>	<ul style="list-style-type: none"> <li>Prevent extreme priced orders to be input to system</li> <li>2-stage to allow a smooth price formation process</li> </ul>
2. Random Closing	<ul style="list-style-type: none"> <li>Auction matching start randomly within 16:10 to 16:12, exact ending of the CAS determined randomly by the system</li> </ul>	<ul style="list-style-type: none"> <li>Deter gaming around closing time</li> <li>Encourage earlier input of orders</li> </ul>
3. Auction Transparency	<ul style="list-style-type: none"> <li>Showing the reference price/CTS closing price, upper and lower price limit, and imbalance information</li> </ul>	<ul style="list-style-type: none"> <li>Address previous CAS issue – extreme price not known by the market</li> <li>Additional information to facilitate price discovery and trading</li> </ul>
4. At-auction Limit Orders	<ul style="list-style-type: none"> <li>Order type with price protection available to all types of investors throughout the CAS</li> </ul>	<ul style="list-style-type: none"> <li>Provide price protection as well as price improvement opportunity</li> </ul>

Note: See Appendix 3 for international comparison of closing auction features.

# How retail investors may benefit from the new CAS



- Outstanding orders entered in the CTS would be carried over to CAS and enjoy higher time priority; these orders could be cancelled or amended in the first 7 minutes of the CAS
- Would be able to input new orders in the CAS using at-auction limit order type with price protection to take advantage of potential price improvement opportunities
- New market data would be available to facilitate trading: reference price/CTS closing price, upper and lower price limit, imbalance information
- Investors could continue to participate in the CTS, where liquidity would not be impacted materially (see Appendix 4)

# Phased rollout to different securities to ensure a smooth rollout



Phase	<b>Phase I Securities:</b>  <b>Index Constituent Stocks</b> <i>(Subject to consultation feedback)</i>	<b>Phase II Securities:</b>  <b>Other Stocks</b> <i>(subject to Phase I result and market feedback)</i>
<b>Scope</b>	<p><b>A. Major index constituents (~280 stocks)</b></p> <ul style="list-style-type: none"><li>▪ Stock Connect stocks including:<ul style="list-style-type: none"><li>– Constituent stocks of Hang Seng Composite LargeCap and MidCap indexes</li><li>– Other Stock Connect stocks</li></ul></li><li>▪ Covers most equities and almost all major index constituents</li></ul> <p><b>B. ETFs that track Hong Kong stocks (~40 ETFs)</b></p>	<p><b>C. Include remaining ~1,500 stocks and ETFs plus some other products</b></p> <ul style="list-style-type: none"><li>▪ Covers all equities and funds</li><li>▪ Excludes structured products and debt securities</li></ul>

## **16 January 2015 – Issuance of Consultation Paper**

<http://www.hkex.com.hk/eng/newsconsul/mktconsul/marketconsultation.htm>

## **Then a 12-week Consultation Period**

## **10 April 2015 – Deadline for Responses to Consultation**

[response@hkex.com.hk](mailto:response@hkex.com.hk)

**Any Questions?**



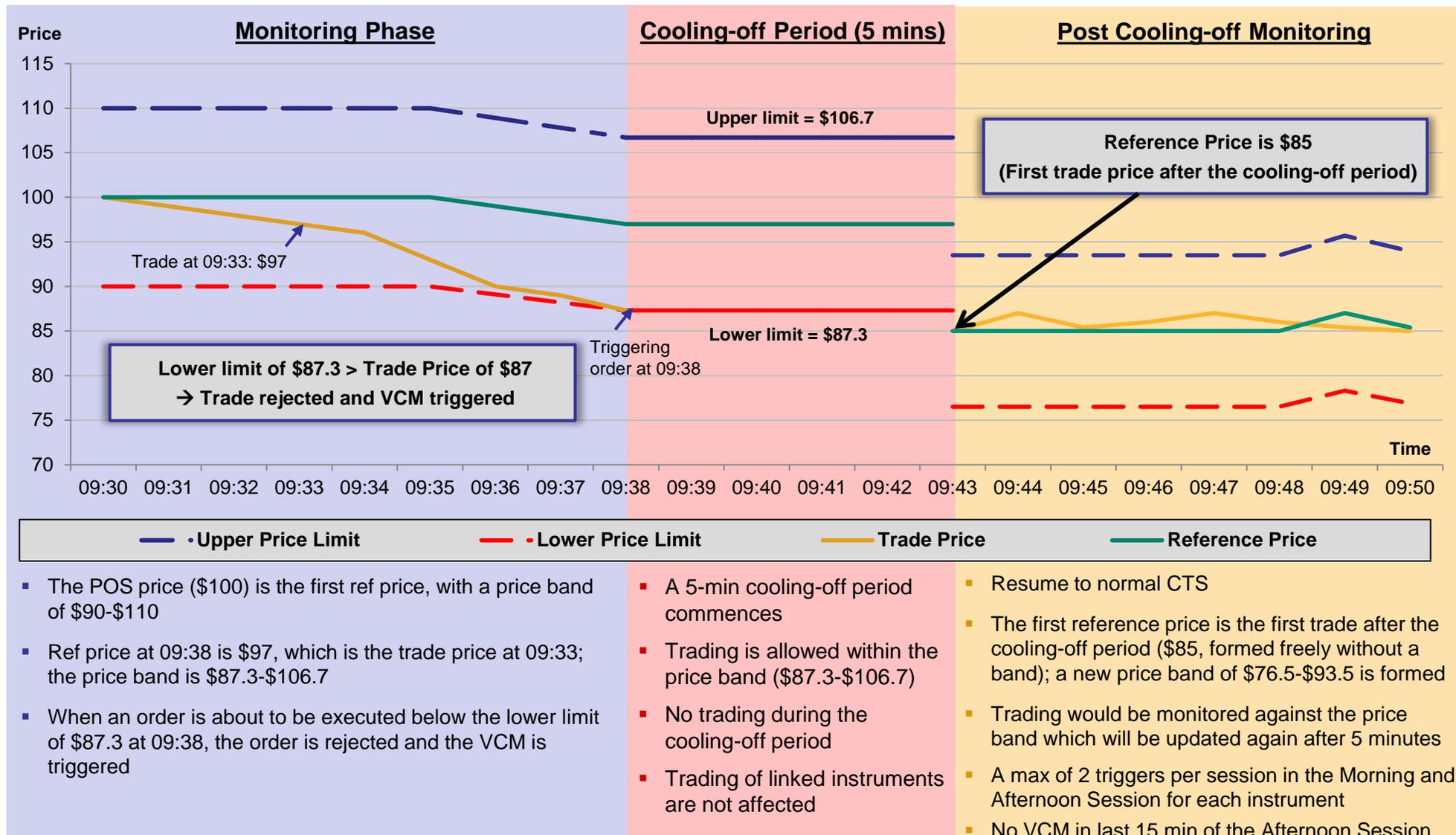
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# Appendices

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# Appendix 1: VCM model illustration

## Scenario: No trading during the cooling-off period



Note: Illustrative example of an applicable VCM stock during CTS (excluding last 15 minutes)

## Appendix 2: Current closing methodology



**Methodology – Taking the median of 5 nominal prices in the last minute of the CTS as the closing price**

### Illustration:

Snapshot	Time	Bid Price	Ask Price	Last Recorded Price	Nominal Price
1 <sup>st</sup>	3:59:00 p.m.	\$39.40	\$39.50	\$39.50	\$39.50
2 <sup>nd</sup>	3:59:15 p.m.	\$39.40	\$39.50	\$39.50	\$39.50
3 <sup>rd</sup>	3:59:30 p.m.	\$39.30	\$39.40	\$39.50	\$39.40
4 <sup>th</sup>	3:59:45 p.m.	\$39.30	\$39.40	\$39.40	\$39.40
5 <sup>th</sup>	4:00:00 p.m.	\$39.20	\$39.30	\$39.30	\$39.30

Median of 5 nominal prices

**Median Price = \$39.40 which then becomes the closing price**

# Appendix 3: International comparison

## Features used by other major exchanges to address price instability



Exchange	Features to Address Price Instability Issue				
	Price limit	At-auction limit orders throughout CAS	Random closing	No cancellation near the end of CAS	Auction extension upon price breach
<b>HKEx (Hong Kong)</b>	✓ <b>NEW</b> (5% from last CTS; then within best bid/ask) For volatility control	✓ <b>NEW</b> Better price discovery by allowing offsetting flows	✓ <b>NEW</b> Prevent gaming of closing time	✓ <b>From Previous CAS</b> Prevent last minute order withdrawal	✗ <b>NOT Proposed</b> Already have price limit which is more stringent; complicated design
<b>NYSE/NASDAQ (US)</b>	✓	✓	✗	✓	✗
<b>LSE/DB (UK/Germany)</b>	✗	✓	✓	✗	✓
<b>Euronext (Paris)</b>	✗	✓	✗	✗	✓
<b>SGX (Singapore)</b>	✗	✓	✓	✓	✗
<b>KRX (Korea)</b>	✓	✓	✓	✗	✓
<b>TSE (Japan)</b>	✓	✓	✗	✗	✗
<b>ASX (Australia)</b>	✗	✓	✓	✗	✗
<b>TWSE (Taiwan)</b>	✓	✓	✗	✗	✓
<b>SZSE (Mainland)</b>	✓	✓	✗	✗	✗

**Propose to adopt all features except auction extension to address the price instability issue**

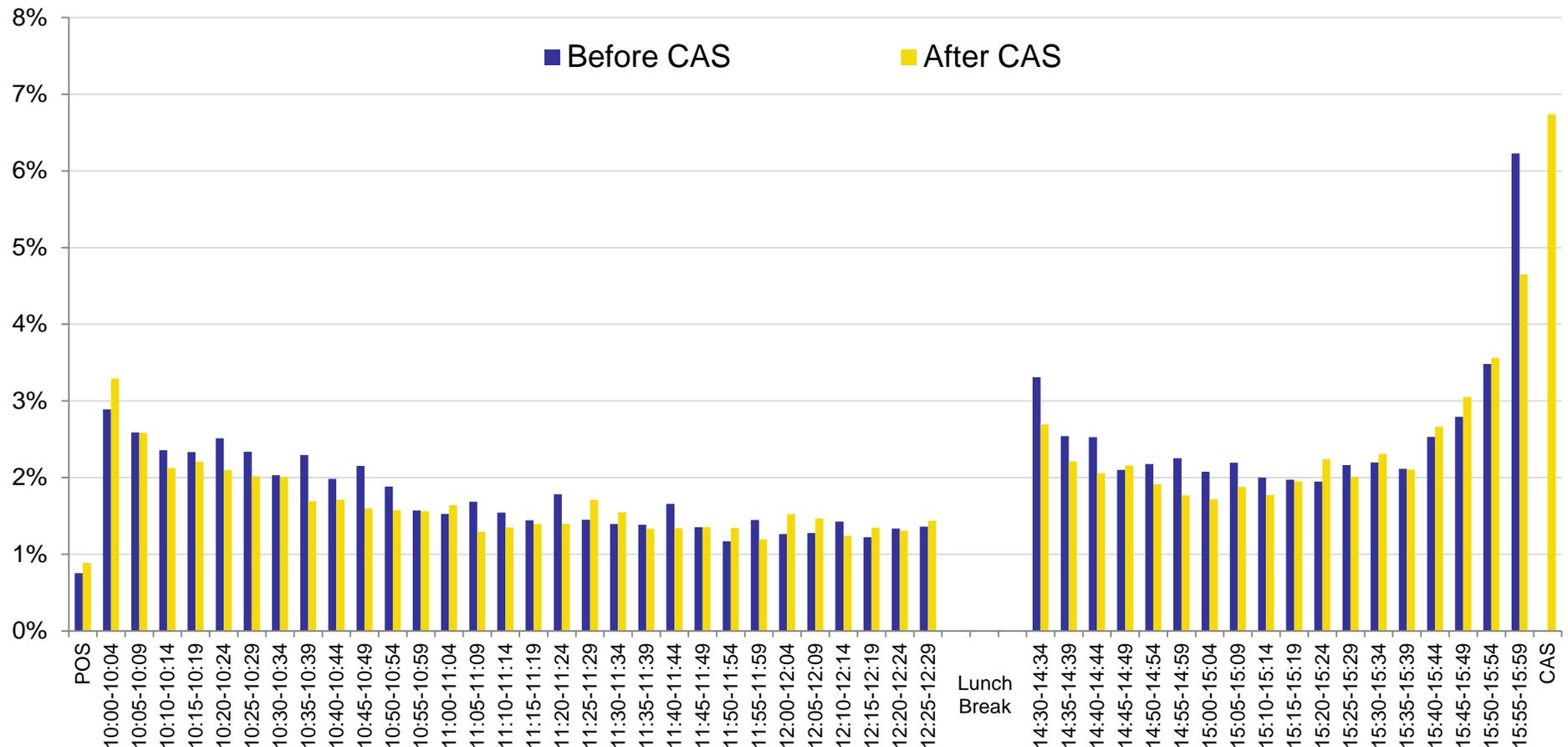
\* Price limit varies according to the security price, i.e. the smaller the price, the larger the percentage limit.

Note: the above table is compiled on publicly available information. Please refer to the relevant exchanges for more details or further updates.

# Appendix 4: Comparison of intra-day turnover distribution as observed from the previous CAS



## Intra-day Turnover Distribution – Before and After CAS\*



\*Based on trading statistics during the initial period before and after launch of the previous CAS.