

September 2016

BRIEFING SESSION

**IMPLEMENTATION OF VOLATILITY
CONTROL MECHANISM (VCM)
IN DERIVATIVES MARKET
&
MARKET REHEARSAL**

HKEX
香港交易所

AGENDA

1

VCM Model in Derivatives Market

2

Market Rehearsal

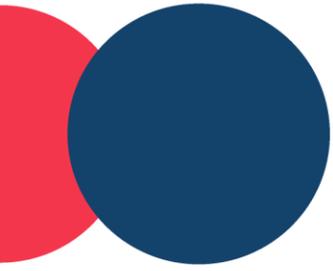
3

Implementation Schedule

4

Q & A





VCM MODEL IN DERIVATIVES MARKET

VCM model - Key parameters

- Compare potential traded price against traded price executed **5 minutes** ago
- If price deviation larger than **5%**
- Trigger **5-minute** cooling-off period



VCM model - Highlights

VCM Exchange Contracts	<ul style="list-style-type: none">▪ Total 8 contracts: spot and next calendar months of HSI Futures (HSI), Mini-HSI Futures (MHI), H-shares Index Futures (HHI) and Mini H-shares Index Futures (MCH)
Monitoring Phase	<ul style="list-style-type: none">▪ Reference to a dynamic price (last trade 5-minute ago) to capture rapid and large price movements▪ No VCM monitoring in the first 15 minutes of Morning and Afternoon Sessions, and the whole After-Hours Futures Trading Session▪ No cooling-off period in the last 15 minutes^{*#} of the Afternoon Session▪ Maximum of one trigger in each trading session for each contract (i.e. 1 in the Morning Session and 1 in the Afternoon Session) to minimize market interruption▪ No VCM monitoring for the triggered contract after one trigger in the rest of the same trading session
Cooling-off Period	<ul style="list-style-type: none">▪ The triggered instrument would only be allowed to trade within price limit (±5% for futures contracts)▪ The cooling-off period would last for 5 minutes, and trading would resume to normal afterwards
VCM Information Dissemination	<ul style="list-style-type: none">▪ The following will be disseminated via market message when a cooling-off period is triggered: VCM start time and end time, VCM reference price, upper and lower price limit

* Since a VCM trigger will last for 5 minutes, the monitoring will stop 20 minutes before end of the Afternoon Session.

There is no cooling-off period 15 minutes before the market close at noon in the case of half day trading



VCM model - Applicable period

Normal trading day

Period	08:45-09:15	09:15-09:30	09:30-12:00	Lunch Break	12:30-13:00	13:00-13:15	13:15-16:15 [#]	16:15-16:30	17:15-23:45
	Pre-Market	Morning Session			Pre-Market	Afternoon Session			AHFT
VCM Applicable?	x	x	✓		x	x	✓	x	x
First Reference Price			Last traded price before 9:25*				Last traded price before 13:10*		

Half trading day

Period	08:45-09:15	09:15-09:30	09:30-12:15 [#]	12:15-12:30
	Pre-Market	Morning Session		
VCM Applicable?	x	x	✓	x
First Reference Price			Last traded price before 9:25*	

Remarks:

 Pre-Market Opening Period

 Open Trading Session

Pre-Market Opening Period will be applied to MCH futures starting from 3-Oct-2016.

[#] Spot month contract's last trading time on last trading day is 16:00 on normal trading day and 12:00 on half trading day.

* If there is no trading in the Pre-Market Opening Period and after market open, the first trade will become the first reference price.



VCM model - Reference price

Selection of reference price:

1. VCM monitoring starts at 9:30 for derivatives market, reference price should be last traded price executed before 9:25 (i.e. 5 minutes before). Such reference price will be updated at the end of each one second interval
2. If there is no trade execution 5 minutes before, system will further search backward for the latest last traded price as reference price. This search can go backward till market open where the Calculated Opening Price (COP) established during the Pre-Market Opening period will be used as reference price
3. If there is no trade execution from market open to the start of the VCM Monitoring Period, the VCM Monitoring Period will be postponed until there is a first trade
4. Reference price from morning will not be brought forward to the afternoon. The system will search for the first Reference Price the same way as in the morning



VCM model - Order handling during cooling-off period

When Cooling-off period is triggered due to VCM upper price limit being reached

- The incoming order can be partially executed to the extent that the trade prices are at or within limits. The remaining part of the order with potential trade price exceeds the limits will not be executed and cancelled by HKATS
- HKATS will also cancel the existing high price buy orders (i.e. those with buy price $>$ upper price limit) that reside in the buy order queue
- 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 HKATS

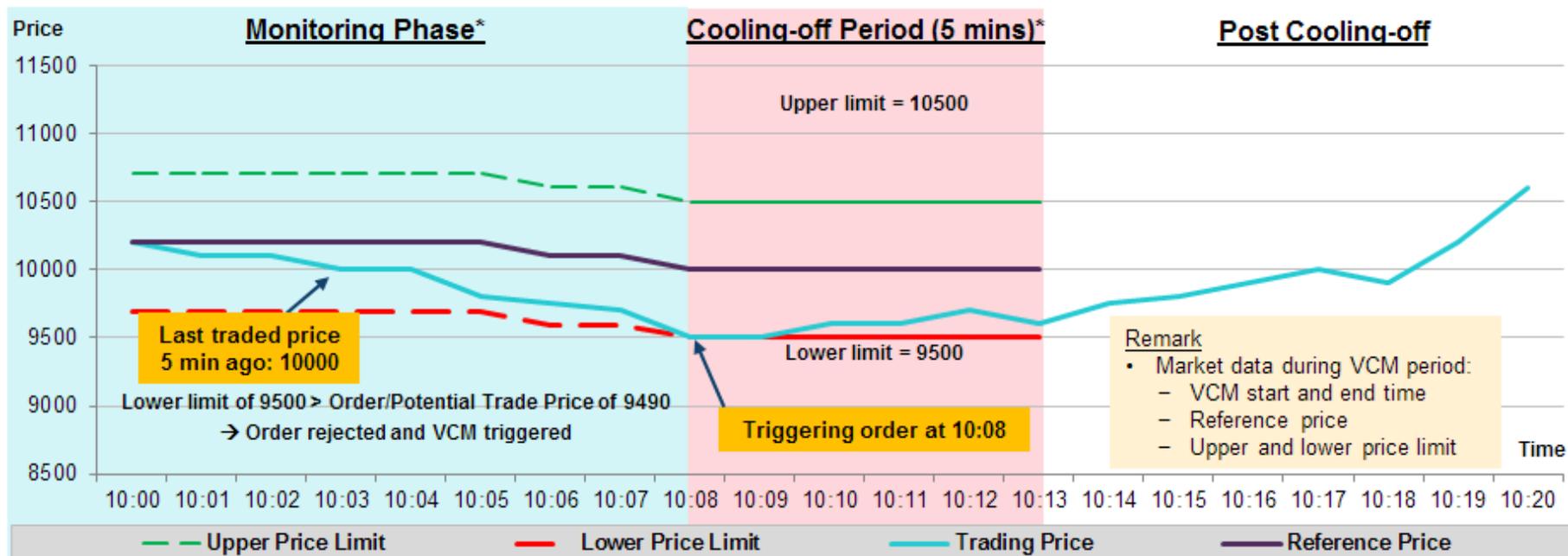
When Cooling-off period is triggered due to VCM lower price limit being reached

- The incoming order can be partially executed to the extent that the trade prices are at or within limits. The remaining part of the order with potential trade price exceeds the limits will not be executed and cancelled by HKATS
- HKATS will also cancel the existing low price sell orders (i.e. those with sell price $<$ lower price limit) that reside in the sell order queue
- 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 HKATS

During the Cooling-off period

- Any incoming buy orders with price higher than upper price limit and sell order with price lower than lower price limit will be rejected by HKATS immediately
 - Any incoming buy orders with price equal to or lower than upper price limit and sell order with price equal to or higher than lower price limit will still be accepted by HKATS
-

VCM model - Example



At 10:08

- Ref price is 10000, which is the last traded price 5 minutes ago; the price band is 9500-10500
- When an order is about to execute below the lower limit of 9500, the order is rejected and the cooling-off period is triggered

- A 5-min cooling-off period commences
- Trading is allowed within a fixed price band (9500-10500)
- Trading of linked instruments are not affected

- Resume to normal trading
- No VCM monitoring in the remaining morning session



VCM model - Monitoring and cooling-off period

- If the morning close happens before the end of cooling-off period (e.g. cooling-off period started at 11:58), the remaining time of the cooling off period will not be brought forward to afternoon
- VCM not applicable in the first 15 minutes after market open and the last 15 minutes of the last trading session (i.e. no cooling-off period after 16:15 on normal trading day and 12:15 on half trading day)

Delayed market open

- For market open which is delayed due to bad weather (e.g. typhoon signal no. 8 or black rainstorm), the first 15 minutes after market open will not be subject to VCM monitoring

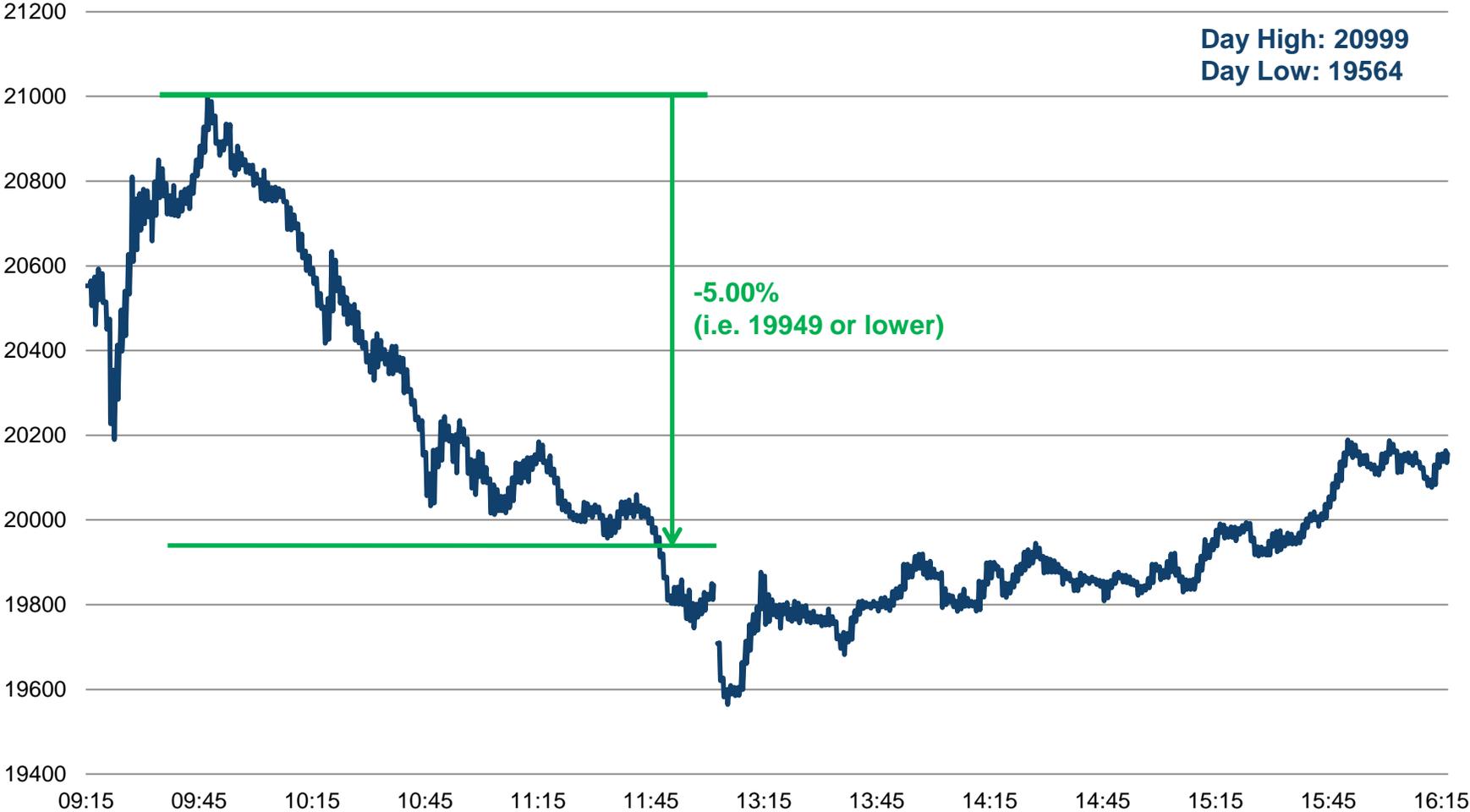
Early market closure

- For early market close due to typhoon (e.g. typhoon signal no.8 is hoisted during trading hour), cooling off can still be triggered in the last 15 minutes before market close and continue until market close



Case study: 24-Jun-2016 (UK voted to leave EU)

Contract: HSI June 2016 futures



Case study: 24-Jun-2016 (UK voted to leave EU)

Contract: HHI June 2016 futures



HKEX's "light-touch" approach is evidenced by the back-test statistics in the past 9 years

Cash Market (launched in production since 22-Aug-2016)

- ~ Once a month trigger across all applicable securities for the most volatile years such as:
 - 2007 (due to the through train speculation)
 - 2008 (due to US subprime mortgage crisis leading to the bankruptcy of Lehman Brothers and global financial crisis)

Derivatives Market

- 2 triggers over the entire period (in 2008)



VCM relevant materials

- 1 Web-corner
- 2 Microsite
- 3 Infographics
- 4 Teaser videos
- 5 Trading Mechanism document

Designated VCM Web Corner (Derivatives market)
www.hkex.com.hk/eng/market/dv_tradinfra/vcm.htm

HKEX's VCM Microsite
www.hkex.com.hk/vcm

VCM A cooling-off period during abnormal price fluctuations
 The Volatility Control Mechanism (VCM) will cool the market for five minutes when there are abrupt price changes on individual stocks or futures

The VCM is now implemented in the securities market
 The VCM is tentatively set to roll out in the derivatives market in the fourth quarter of 2016

See how trading continues, even when the VCM is triggered!

What is the Volatility Control Mechanism (VCM)?

Which securities and futures contracts are covered under VCM?

What is the applicable period for VCM?

Download a brochure about the VCM in the securities market

Download a brochure about the VCM in the derivatives market

Find out more → Securities Market → Derivatives Market

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What is the Volatility Control Mechanism (VCM)?

VCM is NOT a trading halt, nor is it designed to limit the ups and downs of prices of stock or futures contract due to fundamental events

Objectives

- Prevent abnormal price movements during normal trading hours, such as the "Flash Crash" and algorithmic trading
- Reduce excessive price volatility and excessive trading
- Maintain a fair and orderly market

Market Protection **Trading Interruption**

A simple and light-touch approach to balance market protection and trading interruption

What instruments are covered under the VCM?

VCM is applicable to FTSE 100 and S&P 500 constituent stocks and derivatives contracts

When does the VCM apply?

Trading off period by 15:00
 Trading off period by the first bid or offer (market) of the previous session

VCM applies to the starting and closing minutes trading. Also, the first 15 minutes of both sessions and the last 15 minutes of the afternoon session.

VCM Illustration

Price

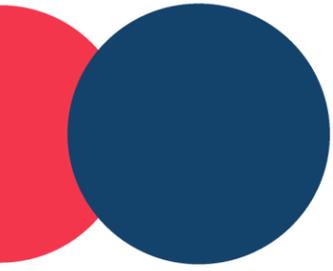
110
100
90
80
70
60

10:00 10:05 10:10 10:15 10:20 10:25 10:30 10:35 10:40 10:45 10:50 10:55 11:00

110
100
90
80
70
60

10:00 10:05 10:10 10:15 10:20 10:25 10:30 10:35 10:40 10:45 10:50 10:55 11:00

Cooling-off Period Post-Cooling-off



MARKET REHEARSAL

Market rehearsal arrangement

Date	Who
24 Sep 2016 (Saturday)	Mandatory for <u>all</u> HKFE EPs to participate

1. Systems include HKATS and OMD-D
2. Half-day rehearsal will simulate activities during normal full day trading
3. VCM Exchange Contracts will be tested during MR
4. Testing will be conducted based on production image as at 19-Aug-2016. All users password will be set to “hkextesting”
5. The test environment will include the setup of Pre-Market Opening Period and Dynamic Price Banding Mechanism for Mini H-shares Index Futures (MCH) which will be effective in production from 3 Oct 2016
6. All EPs must complete and return the Confirmation Form to HKEX after completion on the MR day

Scope of testing (including but not limited to)

Simulate real-life trading activities to ensure proper operations and functioning of OAPI and CLICK:

1. During cooling-off period, receive VCM relevant information including: reference price, upper and lower price limits, start time and end time of cooling-off period
2. During cooling-off period, input order at price outside the price limit (i.e. buy order higher than the upper price limit or sell order lower than the lower price limit) and the order will be rejected by HKATS
3. During cooling-off period, input order at price within the price limit (i.e. buy order at or lower than the upper price limit or sell order at or higher than the lower price limit) and the order will be accepted by HKATS
4. After cooling-off period, repeat step 2 and the order will be accepted by HKATS

Tentative MR timetable

Time	Sessions	Remarks
09:45 – 10:15	Logon to HKATS	
10:15 – 10:30	Pre-Market Opening Session	
10:30 – 10:45	Open Session	No VCM monitoring
10:45 – 11:10	Open Session	With VCM monitoring
11:10 – 11:25	Mid-day Close	
11:25 – 11:40	Pre-Market Opening Session	
11:40 – 11:55	Open Session	No VCM monitoring
11:55 – 12:20	Open Session	With VCM monitoring
12:20 – 12:30	Open Session	No VCM monitoring
12:30 – 13:30	CLOSE	Return Confirmation Form to HKEX

Please refer to detailed guidelines and rundown in the MR information pack



Important notes

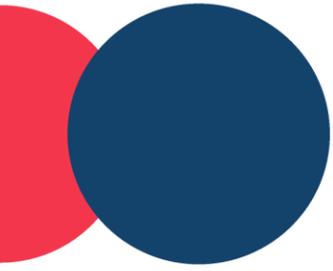
1. ALL HKFE EPs must login before 10:15 on 24-Sep-2016

2. Cancellation/ Postponement of Market Rehearsal

In case of any unexpected situations that the MR need to be cancelled or postponed, HKEX will contact Participants via phone/ emergency email ASAP (around 1 hour before the test) according to the contact list provided

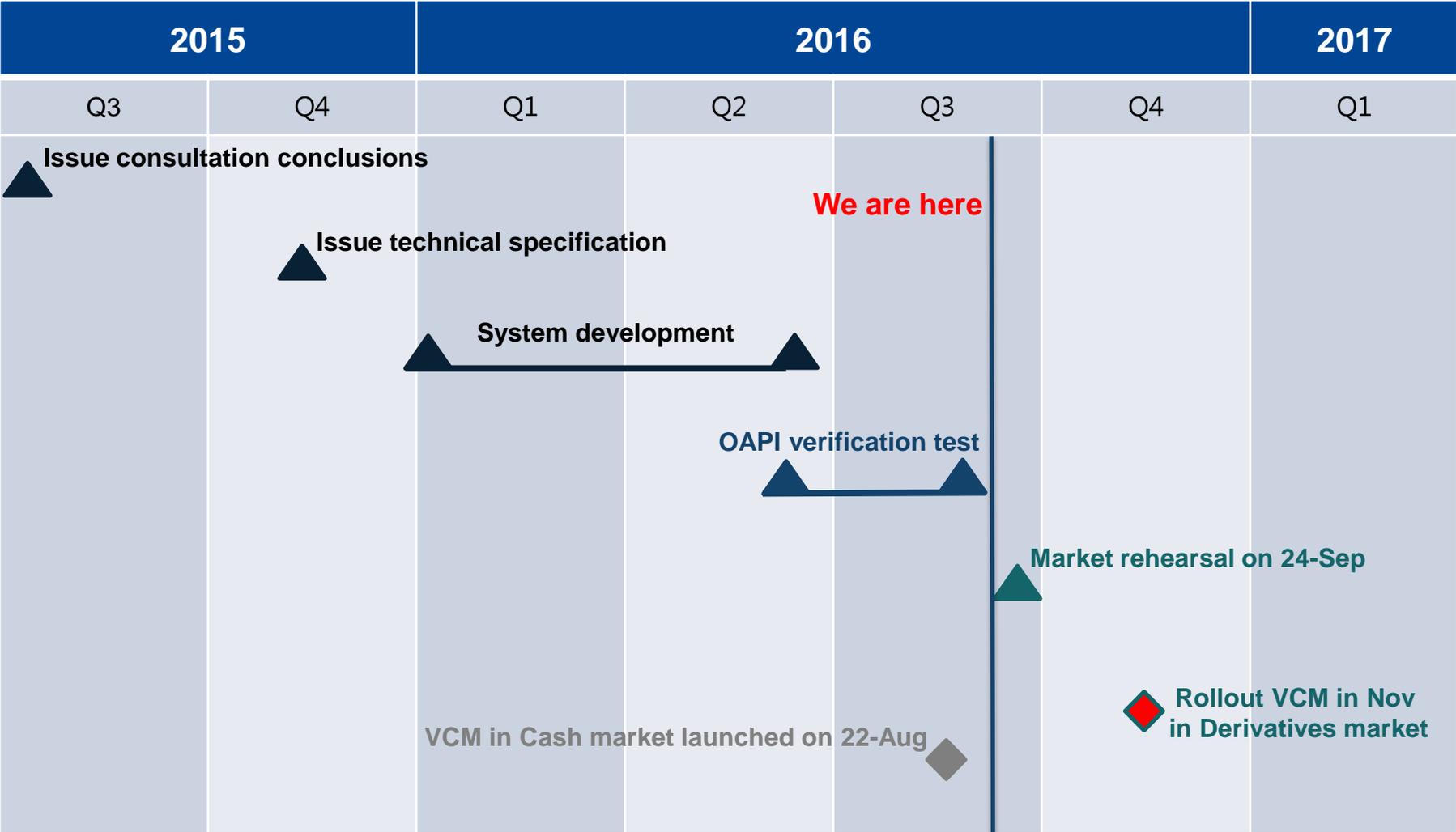
3. Submission of the VCM MR Confirmation Form

Complete and submit the duly signed “VCM MR Confirmation Form” to HKEX via fax or e-mail before 13:30 on 24 Sep 2016 (Saturday)



IMPLEMENTATION SCHEDULE

Implementation timeline – Derivatives Market



The schedule is subject to regulatory approval and market readiness



Enquiry information

Derivatives Market:

E-mail: ClickSupport@hkex.com.hk

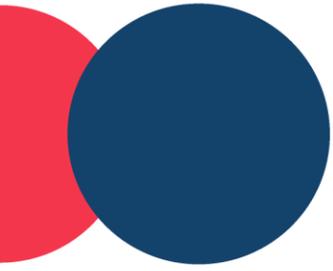
Hotline: 2211 6360

Market Data/ OMD-D related:

E-mail: IVSupport@hkex.com.hk

Hotline: 2211 6558





Q & A

Appendix: New trading session schedule after VCM rollout

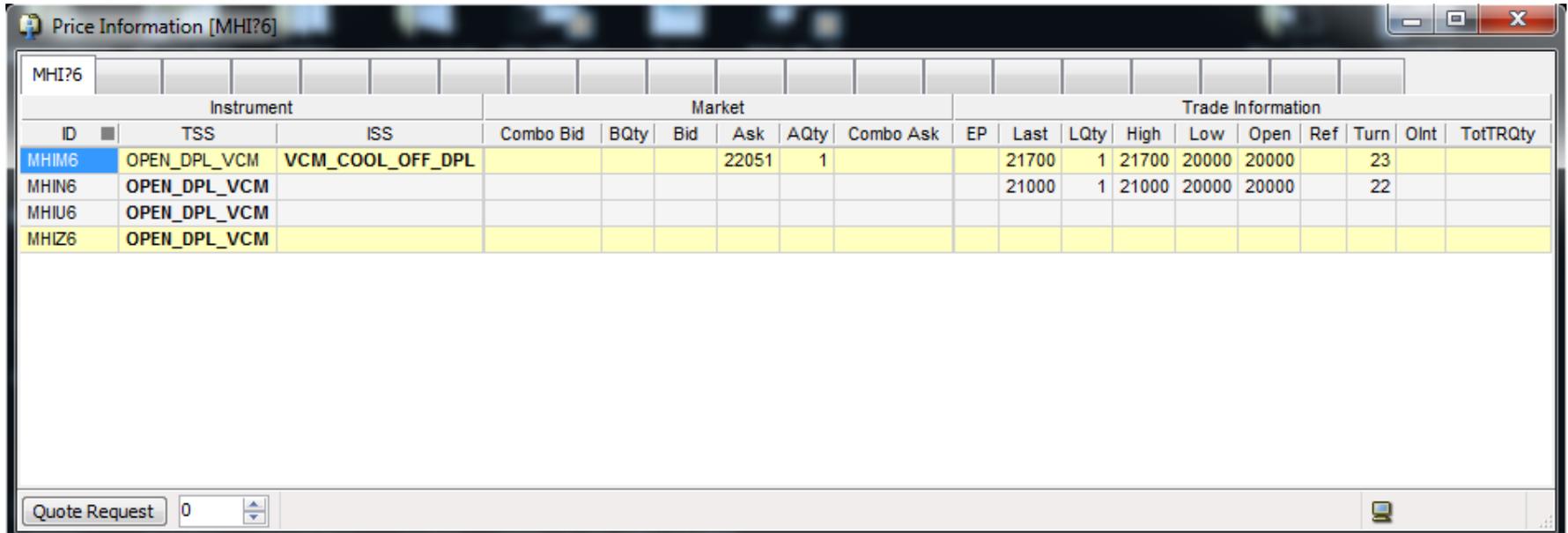
Example: HSI futures

	Before VCM	After VCM
07:30	CL_START	CL_START
08:45	PREOPEN	PREOPEN
09:11	PREOPENALLOC	PREOPENALLOC
09:13	OPENALLOC	OPENALLOC
09:14	PAUSE	PAUSE
09:15	OPEN_DPL	OPEN_DPL
09:30		OPEN_DPL_VCM
12:00	PAUSE	PAUSE
12:29		RESET_VCM
12:30	PREOPEN	PREOPEN
12:56	PREOPENALLOC	PREOPENALLOC
12:58	OPENALLOC	OPENALLOC
12:59	PAUSE	PAUSE
13:00	OPEN_DPL	OPEN_DPL
13:15		OPEN_DPL_VCM
16:10		OPEN_DPL
16:30	CLOSE_TODAY	CLOSE_TODAY
16:32	AHT_INACT_T_ORDER	AHT_INACT_T_ORDER
16:34	AHT_PRE_MKT_ACT	AHT_PRE_MKT_ACT
17:14	AHT_NEXT_DAY	AHT_NEXT_DAY
17:15	AHT_OPEN_PL	AHT_OPEN_PL
23:45	AHT_CLOSE	AHT_CLOSE
23:59	AHT_CLR_INFO	AHT_CLR_INFO
00:30	CL_CLOSE	CL_CLOSE



Appendix: New session states

1. OPEN_DPL_VCM
2. OPEN_DPL
3. VCM_COOL_OFF_DPL (Instrument Session State)
4. VCM_COOL_OFF (Instrument Session State)
5. RESET_VCM



The screenshot shows a window titled "Price Information [MHI?6]". The window contains a table with columns for Instrument, Market, and Trade Information. The table has four rows of data. The first row is highlighted in blue, and the second row is highlighted in yellow. The third and fourth rows are also highlighted in yellow. The table is as follows:

Instrument			Market					Trade Information										
ID	TSS	ISS	Combo Bid	BQty	Bid	Ask	AQty	Combo Ask	EP	Last	LQty	High	Low	Open	Ref	Turn	OInt	TotTRQty
MHIM6	OPEN_DPL_VCM	VCM_COOL_OFF_DPL				22051	1			21700	1	21700	20000	20000		23		
MHIN6	OPEN_DPL_VCM									21000	1	21000	20000	20000		22		
MHIU6	OPEN_DPL_VCM																	
MHIZ6	OPEN_DPL_VCM																	

At the bottom of the window, there is a "Quote Request" field with the value "0" and a small icon on the right.

Appendix: Market Messages

Trigger cooling-off period

The screenshot shows a 'Market Message' window with a table of messages. The message at 15:04:02 is highlighted in yellow, indicating the start of the cooling-off period. Below the table, a red banner contains the details of this event.

Time	ID	Message
15:01:27		Market STOCK FUTURES has changed to state PRE_MKT_ACT; Pre-Market Activities
15:01:27		Instrument Type STOCK FUTURES FUTURES has changed to state PRE_MKT_ACT; Pre-Market Activities
15:01:28		Market STOCK FUTURES has changed to state OPEN; Automatic matching
15:01:28		Instrument Type STOCK FUTURES FUTURES has changed to state OPEN; Automatic matching
15:04:02	MHIM6	Start of Volatility Control Mechanism cool-off period: [MHIM6] Trigger time: [20160627 15:04:02], Reference price: [21000], Upper price limit: [22050], Lower price limit: [19950], End time: [20160627 15:09:02]
15:04:03		Market MINI-HANG SENG FUTURES & OPTIONS Series MHIM6 has changed to state VCM_COOL_OFF_DPL; Automatic matching

Start of Volatility Control Mechanism cool-off period: [MHIM6]
Trigger time: [20160627 15:04:02],
Reference price: [21000],
Upper price limit: [22050],
Lower price limit: [19950],
End time: [20160627 15:09:02]

56 Items

After cooling-off period

The screenshot shows the 'Market Message' window after the cooling-off period. The message at 15:09:02 is highlighted in yellow, indicating the end of the period. Below the table, a red banner contains the details of this event.

Time	ID	Message
15:01:27		Instrument Type STOCK FUTURES FUTURES has changed to state PRE_MKT_ACT; Pre-Market Activities
15:01:28		Market STOCK FUTURES has changed to state OPEN; Automatic matching
15:01:28		Instrument Type STOCK FUTURES FUTURES has changed to state OPEN; Automatic matching
15:04:02	MHIM6	Start of Volatility Control Mechanism cool-off period: [MHIM6] Trigger time: [20160627 15:04:02], Reference price: [21000], Upper price limit: [22050], Lower price limit: [19950], End time: [20160627 15:09:02]
15:04:03		Market MINI-HANG SENG FUTURES & OPTIONS Series MHIM6 has changed to state VCM_COOL_OFF_DPL; Automatic matching
15:09:02		Market MINI-HANG SENG FUTURES & OPTIONS Series MHIM6: Instrument session state has ended

Start of Volatility Control Mechanism cool-off period: [MHIM6]
Trigger time: [20160627 15:04:02],
Reference price: [21000],
Upper price limit: [22050],
Lower price limit: [19950],
End time: [20160627 15:09:02]

57 Items

