14 March 2016

CLOSING AUCTION SESSION (CAS) & VOLATILITY CONTROL MECHANISM (VCM)





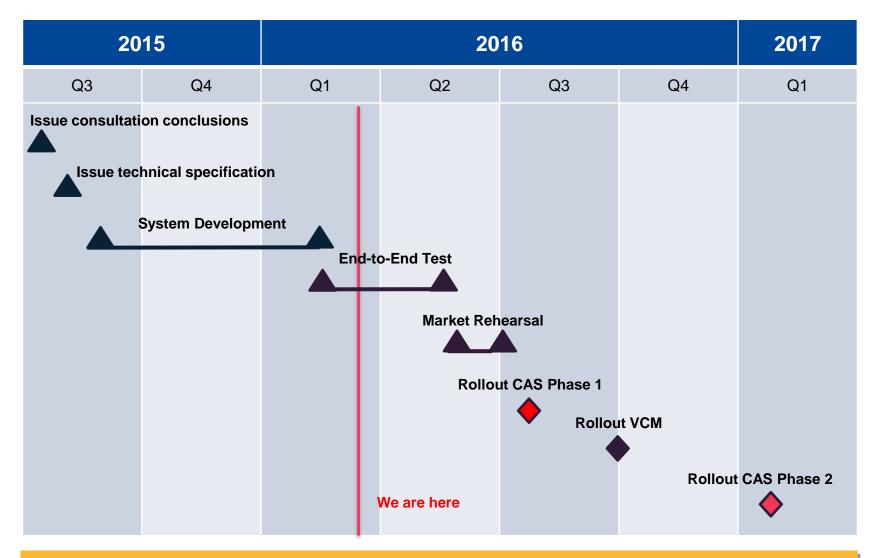
Introduction of CAS in the Securities Market



The Closing Auction Session (CAS)

What	 A maximum of extra 10-minute trading session after the end of the Continuous Trading Session (CTS); in the form of a call auction Consists of <u>a call phase</u> to gather buying and selling interests and then execute trades at <u>a single price</u> determined by an auction algorithm
Why	 Key objectives are to: Determine the closing price of securities Allow trade execution at the closing price (e.g. during index rebalancing)
When	 To be launched in 3rd quarter of 2016 Rollout in 2 phases to different securities

Implementation timeline – Securities Market



The schedule is subject to rule amendment approval by the SFC and market readiness

Phased rollout to different securities to ensure a smooth rollout

Phase	Phase I Securities: Index Constituent Stocks	Phase II Securities: Other Stocks and Funds (subject to Phase I review)
Scope	 A. Major index constituents Stocks including: Constituent stocks of Hang Seng Composite LargeCap and MidCap indexes H shares which have corresponding A shares listed on Mainland securities exchanges B. AII ETFS 	 C. Include remaining equity securities and funds Covers all equities and funds Excludes structured products and debt securities Auction model: No short selling in Phase 1, short selling with a tick rule will be considered in Phase 2 of the CAS Other CAS features will be same as Phase 1

CAS model at a glance

Tim	ne	9:30-12:00; 13:00-16:00	● → 16:00	► 16:01	●	● 16:08 16:10				
		Continuous		Closing Auction Session						
Session		Trading Session (CTS)	Reference Price Fixing Period (1 min)	Order Input Period (5 mins)	No-cancellation Period (2 mins)	Random Closing Period (2 mins)				
			Calculate &	Price Limit:						
		Reference price based	 No Input, Cancel & Amend 	a 5% of Reference Price	b Within lowest as	sk & highest bid				
		on the								
Description		median of 5-		Order Type Allowed:						
		snapshot nominal	Buy (Sell) orders with		At-auction Order					
Des		prices in the last minute of	price lower (higher) than	(higher) than At-auction Limit Order						
		CTS		Order Input, Cancellation & Am	endment:					
			carried forward	Allowed Input, Cancel & Amend	Input Allowed, Cancel	& Amend Not Allowed				

Other New Measures:

- 1. Better transparency by showing the price limit, the 16:00 CTS closing and imbalance information (direction and quantity)
- 2. Short selling not allowed in Phase 1; Consider to allow short selling subject to a tick rule (reference price) in Phase 2
- 3. Allow matching of at-auction and at-auction limit 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. To allow sufficient time for the market to prepare for AHFT's opening, the opening time of AHFT will be changed from 17:00 to 17:15.

Reference price and price limit in CAS

Reference price

The reference price is determined by taking the median of 5 nominal prices in the last minute of the CTS (same as the calculation method of current closing price)

- Reference prices are disseminated for all securities in all markets (i.e. MAIN, GEM, NASD and ETS), including securities that are not covered by CAS
- For securities that are not covered by CAS, the reference price is equivalent to closing price

Price Limit

Applicable session	Scope of price limit
Order Input Period	± 5% from reference price
No-cancellation Period	Within the lowest ask & highest bid at the end of Order Input Period
Random Closing Period	Same as the No-cancellation Period (i.e. Within lowest ask & highest bid at the end of Order Input Period)

 In case only buy orders or only sell orders exist (or both do not exist) at the end of Order Input Period, the price limit of No-cancellation Period and Random Closing Period will be set at ± 5% from reference price (i.e. same as that of Order Input Period)

Examples of price limit in CAS

First Stage 16:01–16:06	Price Lii <u>16:06 P</u> Best (hi Best (lo	ce Price = \$1 nit = \$95 to \$	105 ce = \$103 ce = \$101								
Second Stage 16:06–16:10						nce no can	cellation	and amen	dments o	f orders af	ter
	106										
Illustration	104 102 100 98 96 94 16:0		16:02	16:03	16:04	16:05	16:06	16:07	16:08	16:09	16:10
	16:0	16:01	16:02		16:04	16:05		16:07	I6:08	16:09	16:10



Note: Taking the median of 5 nominal prices in the last minute of the CTS to be the reference price, bid/ask orders cannot deviate more than 5% from the reference price in first stage.

Determination of closing price

Current mechanism

The closing price is determined by taking the median of five nominal prices in the last minute of the CTS

Example:

Snapshot	Time	Nominal price
1 st	15:59:00	\$131.50
2 nd	15:59:15	\$131.50
3 rd	15:59:30	\$131.40
4 th	15:59:45	\$131.40
5th	16:00:00	\$131.30

The five snapshot nominal prices are arranged in ascending order as follows:\$131.30 \$131.40 \$131.40 \$131.50 \$131.50

The median (i.e. the middle one) is \$131.40, which will then be taken as the closing price

After the implementation of CAS

Securities not covered by CAS:

 Remain unchanged (closing price determined based on the median of nominal prices)

Securities covered by CAS:

- Final Indicative Equilibrium Price (IEP) as closing price or
- Reference price as closing price if IEP cannot be determined

Trading hours for CAS in the securities market

Session	Time	Actions allowed (Only applicable to securities that are covered by CAS)
Reference Price Fixing Period	16:00 – 16:01 12:00 – 12:01 (Half day trading)	 Aggressive orders (i.e. buy order > upper limit and sell order < lower limit) with price outside the permissible price limit will be cancelled by AMS/3 System Orders within the permissible price limit will be automatically carried over from CTS to CAS; AMS/3 System will treat all such orders as at-auction limit orders
Order Input Period	16:01 – 16:06 12:01 – 12:06 (Half day trading)	 Input / amend / cancel At-auction orders and At-auction Limit orders Input manual trades Reject manual trades that are inputted during CAS
No- cancellation Period	16:06 – 16:08 12:06 – 12:08 (Half day trading)	 Input At-auction orders and At-auction Limit orders Amendment / cancellation of orders is not allowed Input manual transactions Reject manual trades that are inputted during CAS
Random Closing Period	16:08 – 16:10 12:08 – 12:10 (Half day trading)	Same as No-cancellation Period
Order Matching (start randomly)	16:08 – 16:10 12:08 – 12:10 (Half day trading)	 No order input / amendment / cancellation of orders is allowed No manual trade input / rejection is allowed AMS/3 System matches order based on final Indicative Equilibrium Price (IEP), or based on the reference price in the absence of final IEP Order matching is based on order type, price and then time priority
Market Close	16:10 12:10 (half day trading)	Market close



The trading session information above are disseminated for securities in all markets (i.e. MAIN, GEM, NASD and ETS). However during CAS, Exchange Participants can only trade securities that are covered by CAS.

Change of trading hours after implementation of CAS

- For **securities market**, closing time will change from 16:00 to a random closing of anytime between 16:08 and 16:10 for normal trading day; and from 12:00 to a random closing of anytime between 12:08 and 12:10 for half day trading
- For **derivatives market**, the following closing time will be applied and start time of After Hours Futures Trading (AHFT) session will be changed from 17:00 to 17:15

	Market closing time (exclude last trading day)			t's last trading time rading day	AHFT market	opening time	AHFT market closing time		
	Current	Current After CAS Current After CA		t After CAS Current		After CAS	Current	After CAS	
Equity Index futures and options	16:15	16:30	16:00	16:00*	17:00	17:15	23:45	23:45	
Stock futures and Stock options	16:00	16:00	16:00	16:00	Not applicable	Not applicable	Not applicable	Not applicable	

Whole day trading

Half day trading

	Market closing time (exclude last trading day)		Expiring contract's last trading time on last trading day		AHFT market	opening time	AHFT market closing time		
	Current	Current After CAS Current		After CAS	Current	After CAS	Current	After CAS	
Equity Index futures and options	12:00	12:30	12:00	12:00#	Not applicable	Not applicable	Not applicable	Not applicable	
Stock futures and Stock options	12:00	12:00	12:00	12:00	Not applicable	Not applicable	Not applicable	Not applicable	



*CES 120 China Futures will be 15:00 (unchanged), Dividend and BRICS Futures shall be 16:30 (changed) # CES 120 China Futures will be 11:30, Dividend and BRICS Futures shall be 12:30

Securities Market Makers obligations

- Obligations for Securities Market Makers (SMM) are not applicable in CAS
- Trades conducted by SMMs during CAS are not eligible for SMM incentives
- Market making orders of SMMs will be automatically carried forward to CAS and processed by AMS/3 as at-auction limit orders
- If necessary, SMMs can cancel their market making orders during or before the Order Input Period

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Introduction of VCM in Cash and Derivatives Markets

Key Principles of VCM

VCM is NOT a …	VCM is intended to …
 Trading halt to suspend trading 	 Prevent drastic events such as algo errors/flash crash which may cause systemic risks
 Limit price movement of individual stocks and futures contracts 	 Offer temporary cooling-off period and allow trading within a band during the cooling-off; normal trading to resume afterwards

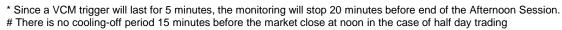
A simple and light-touch approach to balance market protection and trading interruption:

- VCM triggered if a stock (futures contract) is ±10%(±5%) away from the last traded price 5-min ago; 5-min cooling-off period will start to allow trading within the band only; normal trading will resume afterwards
- Only applicable to key HSI & HSCEI constituent stocks (81) and related index futures contracts (8)
- Apply to continuous trading sessions (CTS), excluding the first 15 min of the Morning and Afternoon Sessions, the last 15 min of the Afternoon Session and After Hours Futures Trading (AHFT) session of the derivatives market

HK has been able to learn from the VCM experience of other markets; A simple and light-touch model should be most suitable for HK

VCM model - Highlights

	 Reference to a dynamic price (last trade 5-minute ago) to capture rapid and large price movements 					
	 Monitoring stops in the first 15 minutes of Morning and Afternoon Sessions to allow free price discovery 					
Monitoring Phase	 No cooling-off period in the last 15 minutes^{*#} of the Afternoon Session to allow free price discovery and avoid causing overnight risk 					
	 Maximum of one trigger in each trading session for each instrument (i.e. 1 in the Morning Session and 1 in the Afternoon Session) to minimize market interruption 					
	 No VCM monitoring for the triggered instrument after one trigger in the rest of the same trading session 					
Cooling-off	 The cooling-off period would last for 5 minutes, and trading would resume to normal afterwards 					
Period	 The triggered instrument would only be allowed to trade within price limit (±10% for stocks and ±5% for futures contracts) 					
	 All VCM securities have an indicator for identification 					
Market Data Dissemination	 All veil securities have an indicator for identification The following will be disseminated when a cooling-off period is triggered: VCM start time, VCM end time, reference price, upper and lower price limit 					



VCM model - How it works

/ deriv	securities vatives ducts	 Derivatives: H 	ISI Futures (H	constituent stocks (ISI), Mini-HSI Futu (MCH) spot month	res (MHI), H-sha	ares Index Futu	. ,		
Trigg	gering	Triggering lev		from the reference	•				
	bint	 >±5% from the reference price for derivatives market Reference price: Last trade 5 minutes ago 							
	(excludin	Illustrative exa g first 15 minutes of		y the trading of an a Afternoon Session				ion)	
Price	Mon	itoring Phase		Cooling-off Per	riod (5 mins)	E	Post Coolii	ng-off	
110				Upper limit =	\$106 7				
105				Opper minit =	= \$100.7				
100									
95	Trade at 10:02	(Last							
90	traded price ago): \$9	5 min		Laura limit	¢07.0				
80		f \$87.3 > Trade Price	of \$87	Lower limit					
75		jected and VCM trigg	· · ·						
70	10.01 10.02	10:03 10:04 10:05 1	0.06 10.07 1		0.11 10.12 10.13	3 10:14 10:15	10.16 10.17	10.18 10	Time
10.00	• Upper Pri		- Lower Pr					nce Price	.19 10.20
	• Opper Pri		- Lower Pr		Trading Pr	ICE •		ice Price	



VCM model - How it works

When VCM triggered due to upper price limit being reached

- AMS/3 and HKATS systems will cancel the following orders:
 - High price buy orders in buy order queue (i.e. those with buy price > upper price limit)
 - Buy/sell order that triggered the VCM (no matter whether the price of the buy/sell order is high or low)
- Within the 5-minute cooling-off period, Exchange Participants:
 - Can still input sell orders that are higher than upper price limit / buy orders that are lower than lower price limit
 - Cannot input buy orders that are higher than upper price limit / sell orders that are lower than lower price limit

When VCM triggered due to lower price limit being reached

- AMS/3 and HKATS systems will cancel the following orders:
 - Low price sell orders in sell order queues (i.e. those with sell price < lower price limit)
 - Buy/sell order that triggered the VCM (no matter whether the price of the buy/sell order is high or low)
- Within the 5-minute cooling-off period, Exchange Participants:
 - Can input buy orders that are lower than lower price limit / sell orders that are higher than upper price limit
 - Cannot input sell orders that are lower than lower price limit / buy orders that are higher than upper price limit

VCM - Reference Price model

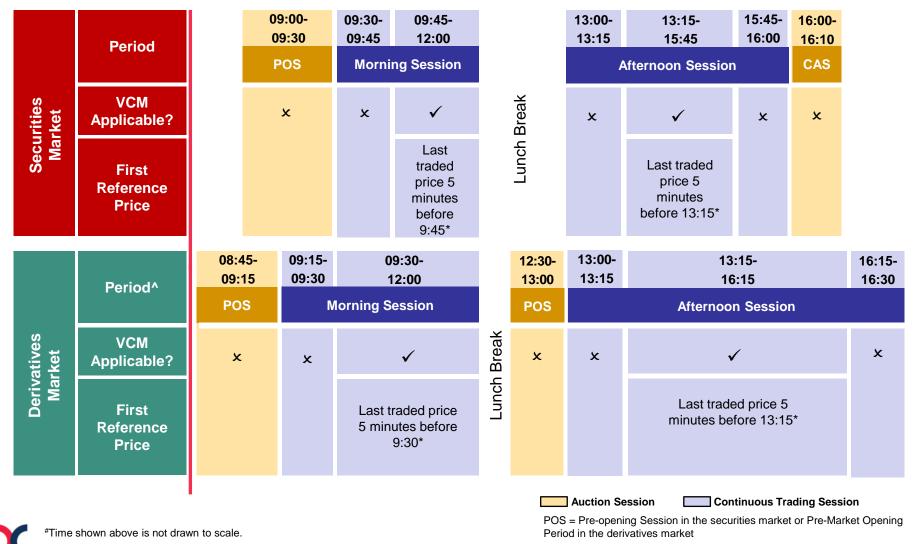
Selection of reference price:

- 1. VCM monitoring starts at 9:30 (9:45) for derivatives (cash) market, reference price should be last traded price executed 5 minutes before 9:30 (9:45)
- 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 auction price established during the pre-opening auction will be used as reference price
- 3. If there is no trade execution from market open to 5 minutes before the start of VCM monitoring, system will use the first traded price as the reference price until there is subsequent execution
- Reference price from A.M. session will not be brought forward to P.M. session. Same mechanism (point 1 – 3 above) will be applied after P.M. session market open

VCM model - Other important features

- If A.M. session close before the end of cooling off period, the remaining time of the cooling off period will not be brought forward to P.M. session
- For normal trading day situation, there will be no cooling off period 15 minutes before market close in the P.M. session
- For half trading day situation (e.g. on the eves of Christmas, new year and Lunar new year) there will be no cooling off period 15 minutes before market close at noon
- For typhoon situation (e.g. typhoon signal no.8 is hoisted during trading hour), cooling off can still be triggered before market close

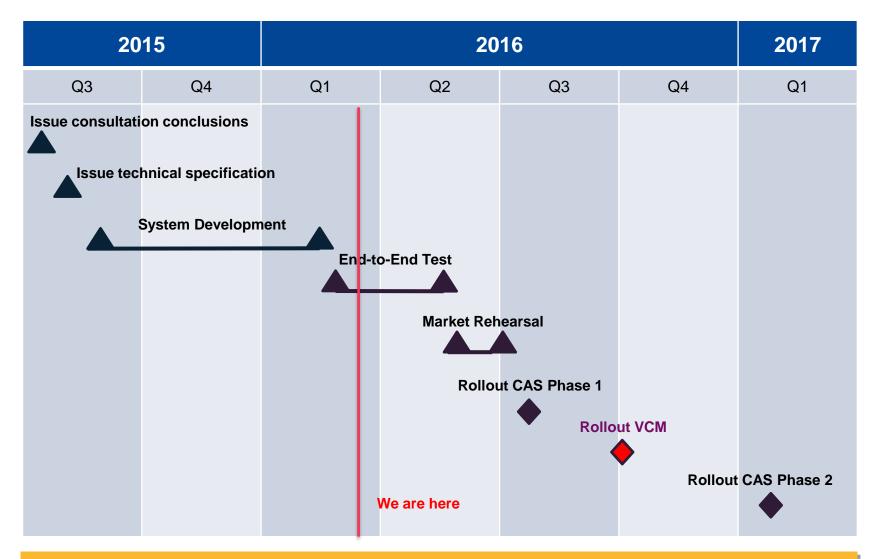
VCM - Applicable period



*For morning session, if there is no trading in the POS and after market open, the first trade will become the first reference price. For afternoon session, if there is no trading after 13:00, the first trade recorded in the afternoon session will become the first reference price.

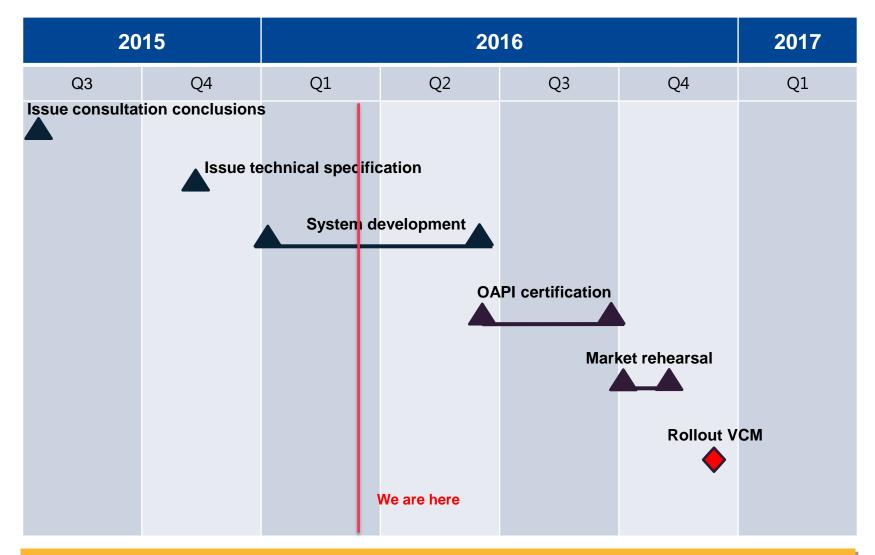
^ Time arrangement after CAS has been implemented in the securities market.

Implementation timeline – Securities Market



The schedule is subject to rule amendment approval by the SFC and market readiness

Implementation timeline – Derivatives Market



The schedule is subject to rule amendment approval by the SFC and market readiness

VCM and CAS web corner

- The web corner will be updated from time to time and provides the following information related to VCM and CAS:
 - Operating mechanism of the two initiatives
 - Consultation conclusions
 - Technical specification document
 - Frequently Asked Questions
- Website

Securities Market	Derivatives market
Home > Market Operations > Securities Trading Infrastructure > Volatility Control Mechanism (VCM) and Closing Auction Session (CAS)	Home > Market Operations > Derivatives Trading Infrastructure > Volatility Control Mechanism (VCM)
https://www.hkex.com.hk/eng/market/sec_tradinfra/vc m_cas/vcm_cas.htm	http://www.hkex.com.hk/eng/market/dv_tradinfra/vcm.ht m



Contact information for VCM and CAS enquiries

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Enquiry for VCM – Derivatives Market HKATS hotline : 2211 6360 E-mail : <u>ClickSupport@hkex.com.hk</u>

Enquiry for market information disseminated by OMD-C Vendor support hotline : 2211 6558 Email : <u>IVSupport@hkex.com.hk</u>

QUESTIONS?

