

風險管理的的合規提示
(僅適用於結算參與者¹)

風險管理是香港中央結算有限公司、香港期貨結算有限公司及香港聯合交易所期權結算所有限公司（統稱為「結算所」）之結算參與者的主要責任之一，詳情記載於結算所的參與者納入資料及有關的規則及程序當中。

結算參與者應設立穩健的風險管理框架和控制措施，以確保在任何時候能對各種主要風險（包括但不限於信貸風險，流動資金風險，營運風險，市場風險和資本）進行適當的評估、監控和緩解。

以下列出 2018 年合規評核及現場視察之年度計劃中發現的一些風險管理方面的弱點：

1. 壓力測試

- ***沒有對其自營或客戶因投資香港交易所產品所需承受的風險進行適當的壓力測試，特別是對非線性產品（如期權）的風險。***

由於非線性產品在極端情況下所致的損失可以倍數方式增長，所以對於結算參與者而言，就非線性產品（如期權）進行壓力測試是非常重要的。進行大量非線性產品交易活動的結算參與者應落實和定期進行每週至少一次壓力測試，評估其投資組合在極端但可能的市況下所潛在的虧損。結算參與者亦應該制定適當的壓力測試政策和程序，明確制定壓力測試的方法，頻密程度以及審查和上報機制。

有關壓力測試詳情請參閱[附件](#)(只供英文版)。

¹ (i)香港期貨結算有限公司之結算參與者及全面結算參與者，及(ii)香港中央結算有限公司及香港聯合交易所期權結算所有限公司之直接結算參與者及全面結算參與者

2. 信貸風險管理 - 持倉限額的監察和延誤付款的管理

- **對信貸風險缺乏充分而有效的監控**

結算參與者一般利用對其客戶設定如持倉限額、信貸額度及/或交易限額等額度以控制信貸風險。但是，部分結算參與者並沒有利用系統對客戶的持倉與限額進行監控及/或在允許客戶進行交易前只參考其購買力金額。我們亦發現關於處理未償還貸款的政策和指引有不足之處，當中所涉及的跟進、匯報及上報機制，及撥備/註銷等程序沒有清晰地訂明。

結算參與者應就信貸風險管理方面實施適當和充足的監控安排，包括但不限於把對客戶設定的限額輸入交易系統，以便進行持續監控。缺乏有效及充足的監控安排可能導致結算參與者違規並受到紀律處分。

3. 就變更運作及風險監控通知結算所

- **沒有就運作及風險監控的變更，包括但不限於因從事新業務活動所帶來的變化，通知結算所。**

根據結算參與者的申請納入資料（“[參與者及交易權申請之解釋說明](#)”之附件2-注釋2）及《中央結算規則》第1703（iii）條、《期貨結算規則》第214（n）條或《期權結算規則》第403（17）條，結算參與者必須就申請成為參與者時所遞交的資料之變更通知結算所，包括有關開展自營買賣及保證金借貸等新業務時所更新的風險和監控資料文件。

4. 有關存入實物股票所涉及的問題證券風險管理

- **缺乏適當而有效的監控措施以限制因存入問題證券所帶來的風險或損失**

根據《中央結算運作程序》第7.2.2節，結算參與者要為其存於中央結算系統存管處的問題證券負責。存入實物股票應實施適當的監控措施，包括：

- (i) 制定程序以暫緩使用有關股票（例如短倉的交收），直至有關股票重新以香港中央結算（代理人）有限公司的名義完成登記（即股份過戶登記處已確認結算參與者實物股份的有效性和所有權）；
- (ii) 暫扣客戶售股所得款項，直至實物股票完成重新登記；或
- (iii) 在寄存實物股票未獲確認有效前，採取其他措施以管理客戶即時獲取的授信額之風險。

5. 有關履行結算責任的監控、監管及員工培訓

- **對結算運作缺乏足夠的監管及監控，未能確保能及時完成相關程序，達致履行對結算所的付款責任**

結算參與者必須就交收程序建立充分及全面的內部監控及程序，相關員工應遵守訂立的時間表，以確保交收運作順利，特別是就支援或假期替補的情況。有效的結算監管包括：一張列出主要結算運作工序的清單，每項工序有清楚的執行時間、執行者及核對者的簽署，或使用附有自動上報或警示功能的系統，監察每項主要結算運作工序能否及時完成。

我們建議結算參與者應以結算所發出的實際持倉數據或交收報告去評估其資金是否充裕，而並非依靠內部的持倉數據，否則結算參與者未必能發現由內部系統或人手操作導致的錯誤，例如：在期貨結算公司或聯交所期權結算所不準確或不齊全的持倉對銷。這將會導致不準確交收款項評估，並可能引致付款失敗。

結算參與者必需留意由結算所發出的通告，及定期檢討其運作程序，確保遵守有關的規則及監管規定，其中包括確保其交收安排（包括於假期的安排）遵守結算所最新的規定。

結算參與者必需確保其員工對運作及風險控制，款項責任以及逾期付款的後果有足夠及最新的認識。結算參與者應安排員工報讀培訓課程，例如於2018年12月31日發出的通告“[由香港交易所及香港證券及投資學會合辦的培訓課程](#)” (Ref. No. CD/CDCRM/243/2018) 內提及的培訓課程；及提醒員工有關2018年1月28日發出的通告 (Ref. No. [CD/CDCRM/021/2018](#), [CD/CDCRM/022/2018](#) 及 [CD/CDCRM/023/2018](#)) 的事項，以提升員工對結算所發出的款項責任的認知。

6. 風險管治及操作能力

▪ *缺乏完善的風險管理管治制度*

一個完善的風險管治制度通常包括成立專責的風險管理小組，由高級管理人員監管重要的風險事項。我們留意到有部分結算參與者沒有妥善備存管理小組的會議記錄或報告，或高級管理人員於會議中所討論的重點議題。

7. 業務應變計劃

▪ *缺乏足夠的安排以確保於特殊情況下能夠履行對結算所的付款責任*

營運中斷可能會影響結算參與者履行對結算所的付款責任的能力，就此，結算參與者應設立及維持業務應變計劃，並於業務應變計劃中清晰列出該公司在特殊情況下的安排。

31 Oct 2018



STRESS TESTING ON OPTIONS

HKEX
香港交易所

Clearing Risk Management

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AGENDA

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Background

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Linear Products vs Non-Linear Products

3

Stress Testing Calculation



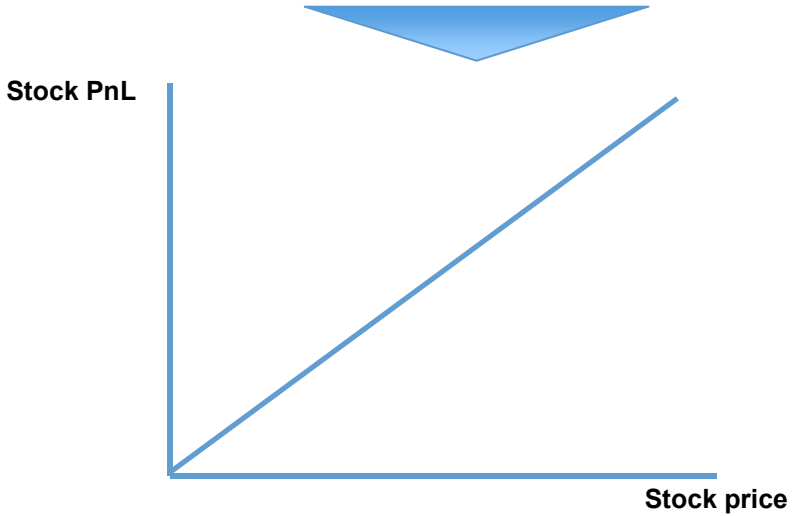
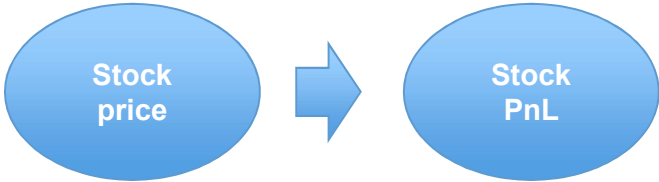
Overview

- Stress testing is the analysis / simulation technique widely used by institutions to evaluate the potential portfolio loss under extreme but plausible market condition.
- Most financial institutions use stress testing as a daily risk management tool e.g. set operational limits, allocate resources to ensure liquidity and capital adequacy for the aforesaid loss.
- Stress testing of non-linear products is crucial to Clearing Participants (CPs) as it tells CPs how the loss of non-linear products increases exponentially under extreme scenarios.
- CPs are strongly recommended to have proper stress testing in place for it's own or clients' exposure on HKEX's products, particularly on non-linear products such as option.

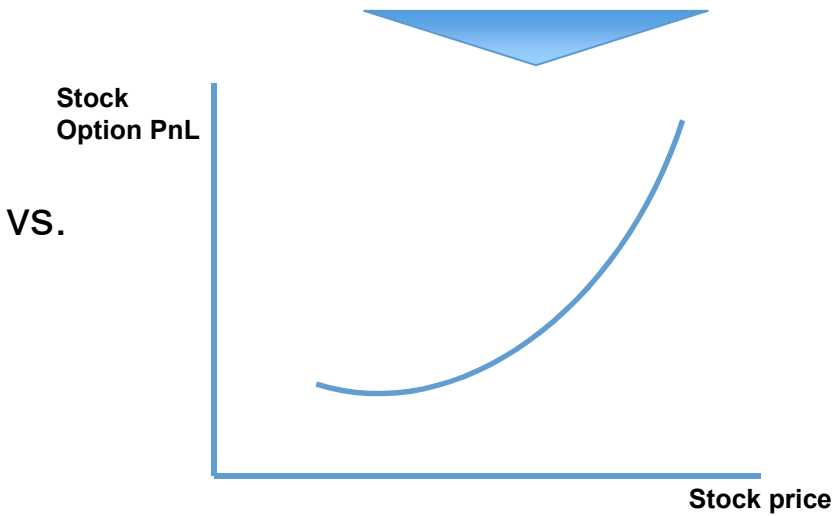
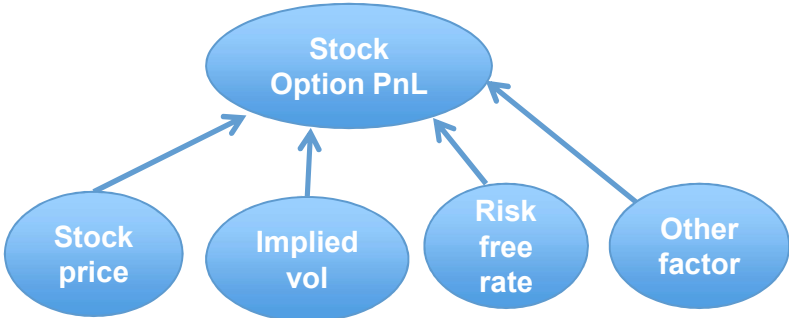


Linear vs. Non-Linear Products

Linear



Non-Linear



• *The change in risk exposure of option is exponential and subject to multiple risk factors, which is different from stock.*



Stress Testing Calculation - SEOCH

Example 1: Bullish view on China Life (2628) on 25 Oct 2018

- Short 1 China Life Oct18 put option at HK\$15.5 strike price (x1000 shares)
- China Life closed at HK\$ 17.1
- Margin Requirement is HK\$ 316

Profit and Loss in HK\$		
Stock price movement assumption	Short 1 put options at HK\$15.5 strike price	Margin deficit per contract
-9%	HK\$ -320	HK\$ -4
-15%	HK\$ -1,010	HK\$ -694
-22%	HK\$ -2,140	HK\$ -1,824

- Additional loss incurred during the positions close-out (3%* or more in normal condition, see below)
- Bid-ask spread will further widen in the stress condition

Bid Orders				Ask Orders			
Type	BQty	Bid	Ask	AQty	Type		
LMT	50	0.55	0.58	106	LMT	HKGS	
LMT	200	0.55	0.58	200	LMT	HKOF	
LMT	200	0.55	0.59	50	LMT	HKIM	
LMT	115	0.54	0.59	101	LMT	HKCT	
LMT	1	0.53	0.59	40	LMT	HKYK	
LMT	30	0.53	0.60	200	LMT	HKNH	
LMT	68	0.53	0.60	30	LMT	HKBN	
LMT	25	0.51	0.60	68	LMT	HKIB	
LMT	25	0.41					

- **Stress loss of short option is massively understated if treated like stock in stress calculation (Leverage effect)**



* $[(0.58-0.55)/2]/0.55=3\%$

Stress Testing Calculation - HKCC

Example 2: Bullish view on Hang Seng Index

- Short 1 Hang Seng Index Mar19 put option at 26,400 strike price
- Hang Seng Index closed at 26,227.7
- Margin Requirement is HK\$ 132,210

Profit and Loss in HK\$		
Stock price movement assumption	Short 1 put options at 26,400 strike price	Margin deficit per contract
-5%	HK\$ -37,350	HK\$ 0
-10%	HK\$ -84,800	HK\$ 0
-20%	HK\$ -201,800	HK\$ -69,590

- Additional loss incurred during the positions close-out (0.7%* or more in normal condition, see below)
- Bid-ask spread will further widen in the stress condition

Bid Orders				Ask Orders			
Type	BQty	Bid	Ask	AQty	Type		
LMT	8	735	745	8	LMT	HKOPT	
LMT	7	732	745	7	LMT	HKNH1	
LMT	5	732	751	7	LMT	HKYKI	
LMT	7	731	759	7	LMT	HKMPH	
LMT	7	729	763	5	LMT	HKLQI	
LMT	5	723	773	5	LMT	HKJPI	
LMT	5	720	774	5	LMT	HKMIV	
LMT	5	704	775	5	LMT	HKSG:	
LMT	5	703	780	5	LMT	HKSG:	
			792	5	LMT	HKIBG	

- **Stress loss of short option is massively understated if treated like stock in stress calculation (Leverage effect)**



* $[(745-735)/2]/735=0.7\%$