

**SEMINAR ON STRESS TESTING
AND
DEFAULT FUND SIZING**

HKEX
香港交易所

AGENDA

1

Background

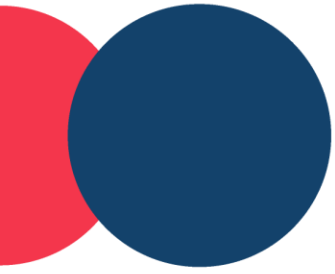
2

Stress Testing Framework

3

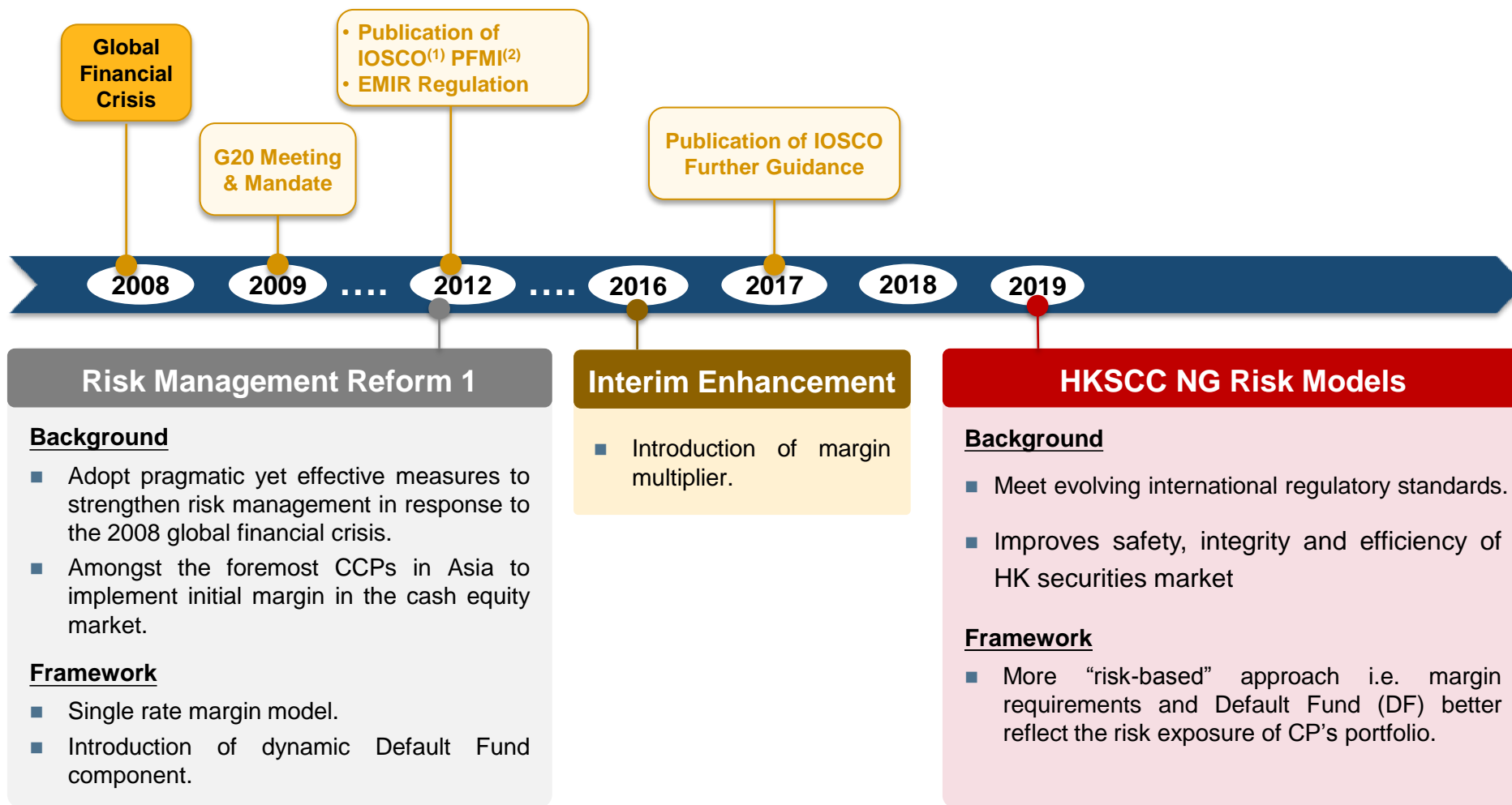
Default Fund Sizing and Allocation





BACKGROUND

Evolution of Global Regulation and HKSCC Risk Management



Risk Management Reform 1

Background

- Adopt pragmatic yet effective measures to strengthen risk management in response to the 2008 global financial crisis.
- Amongst the foremost CCPs in Asia to implement initial margin in the cash equity market.

Framework

- Single rate margin model.
- Introduction of dynamic Default Fund component.

Interim Enhancement

- Introduction of margin multiplier.

HKSCC NG Risk Models

Background

- Meet evolving international regulatory standards.
- Improves safety, integrity and efficiency of HK securities market

Framework

- More “risk-based” approach i.e. margin requirements and Default Fund (DF) better reflect the risk exposure of CP’s portfolio.

A continuous effort to improve the compliance of international regulatory standards and protection in HK securities market



HKSCC NG Risk Model Framework

Key Enhancements

Current HKSCC Model

- **Initial Margin**
 - Single margin rate based on Hang Seng Index (HSI) applied to **all** securities
 - No risk offset among securities
- **Stress Testing**
 - Up and down scenario applied to **all** securities to generally cover systemic risk

Next Generation Risk Models

- **Initial Margin**
 - Margin requirement based on individual stocks volatility
 - Allow risk offset among selected securities (see HKSCC NG IM model framework for details)
- **Stress Testing**
 - Multiple product-specific scenarios applied to **each** security

Focus of the deck

***Enhancements are methodology-centric
and most existing settlement and operation arrangements remain unchanged***



Drivers for Change

Drivers

1 Robustness & Resilience

- Enhances robustness and resilience of CCP and markets
- Improves safety, integrity and efficiency of HK securities market

2 Risk-based Approach

- DF better reflects the portfolio tail risk of each CP
- Higher DF contribution for portfolios that carry higher tail risk
- Reinforces the “defaulter-pays” principle

3 International Best Practices

- Consistent with best practices at global and peer CCPs
- Meets the requirements of the evolving international standards



Current vs Next Generation Risk Models

Stress Testing and Default Fund

	Current Model	Next Generation Risk Model
Stress Testing	1. Events / Scenarios <ul style="list-style-type: none"> 2 systemic risk scenarios (proxy of HSI movement) applied to <u>all</u> securities 	<ul style="list-style-type: none"> > 200 product-specific scenarios applied to <u>each</u> security
	2. Methodology <ul style="list-style-type: none"> Hypothetical Stress Test: <ul style="list-style-type: none"> Market up scenario Market down scenario 	<ul style="list-style-type: none"> Historical scenarios Hypothetical scenarios Theoretical scenarios Idiosyncratic stress scenario(s)
	3. Position Risk Aggregation <ul style="list-style-type: none"> Higher of long / short CNS positions 	<ul style="list-style-type: none"> Portfolio offset
Default Fund	4. Default Fund Sizing <ul style="list-style-type: none"> 1st +5th largest CP exposure 60-days look-back period 	<ul style="list-style-type: none"> 1st +5th largest CP exposure 60-days look-back period <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">No change</div>
	5. CP Allocation <ul style="list-style-type: none"> CNS based 	<ul style="list-style-type: none"> Risk based i.e. stress test value net of its own collateral (EUL)

* Subject to finalization with SFC



Current vs Next Generation Risk Models

Operational flow

Operation

Current Model

6. Review Frequency

- Monthly begin / Ad hoc

7. Collection

- 1st business day after review

8. Default Fund credit

- \$1 million DF credit

9. Report

- Available for DCP and GCP after review

Next Generation Risk Model

- Monthly begin / Ad hoc

No change

- 1st business day after review

No change

- \$1 million DF credit

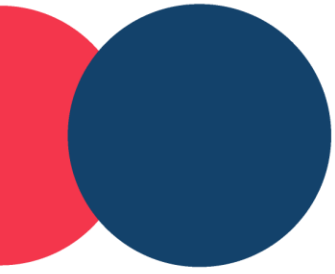
No change

- Available for DCP and GCP after review

No change

Existing operation arrangements will remain unchanged





STRESS TESTING FRAMEWORK

Stress Testing Scenarios

Scenario Types

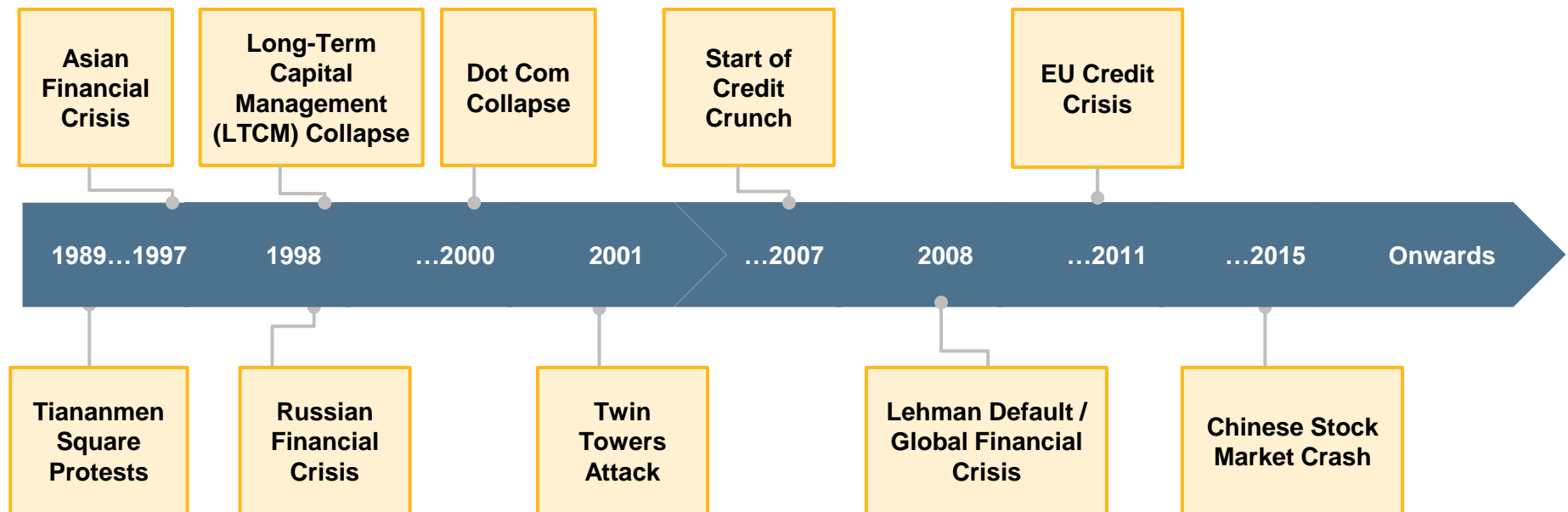
Details

1	Historical	<ul style="list-style-type: none">Historical stress events that consist of peak historical volatilities (e.g. Lehman default)
2	Hypothetical	<ul style="list-style-type: none">Potential “extreme but plausible” Macro-economic conditions which might drive extreme price changes among sectors
3	Theoretical	<ul style="list-style-type: none">Theoretical price changes of a portfolio due to break or boost in correlation between underlying securities
4	Idiosyncratic	<ul style="list-style-type: none">Sudden price collapse (surge) of position(s) in a portfolio



Historical Stress Events

Global and regional events that have major impact on the Hong Kong market



Hypothetical Stress Events

Simulate extreme but plausible events



Financial Sector Shock

Depend heavily on real economy performance and sentiment

- Financials
- Properties & Construction



Telecom Sector Shock

Dominated by a few players with complex business models

- Telecommunication & IT



Energy Sector Shock

Energy crisis leads to price rise of resources

- Energy, Industrials and Utilities
- Transportation
- International Trading



Consumer Sector Shock

Political and economical factors impact consumer expenditure

- Consumer goods and services



Chinese Manufacturing Sector Shock

Shift from industrial to service sector in China

- Manufacturing, material and industrials
- Shanghai Composite Index



Brexit

'Hard' or 'soft' Brexit, no agreement on trade, borders and travels yet

- Multinational corporations (especially conglomerates and financial institutions) with operations in the UK



China Debt Crisis

Risky and poorly collateralised shadow banking sector and high local government debt

- Financials
- Property and construction



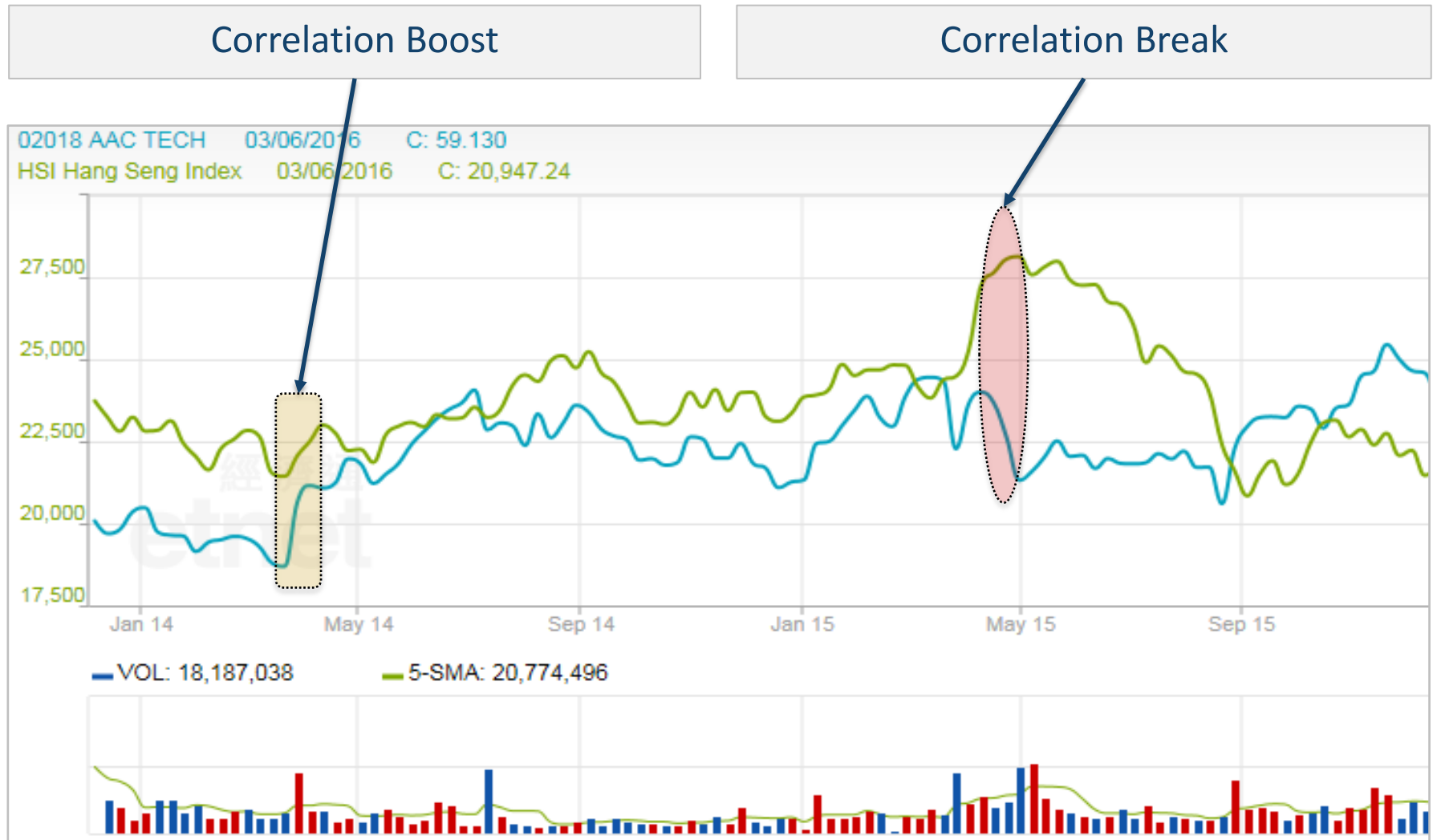
Decoupling of China-Hong Kong equity market

HSI and SCI move independently due to Chinese regulatory changes

- Hang Seng Index

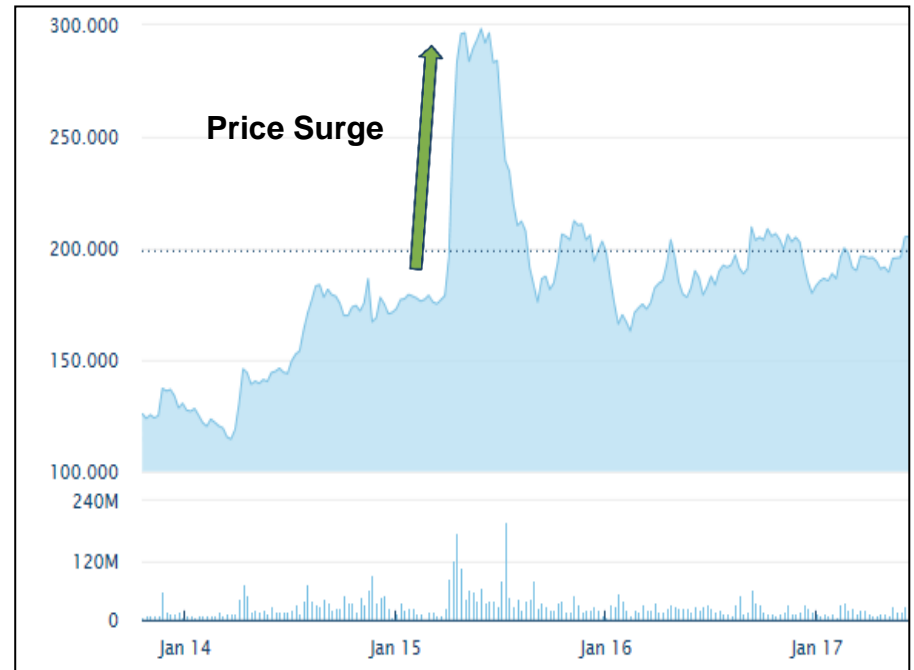


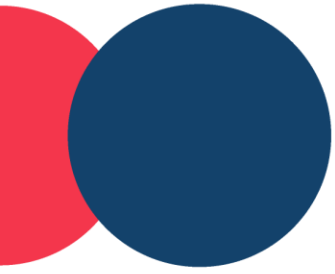
Theoretical Stress Events



Idiosyncratic Stress Events

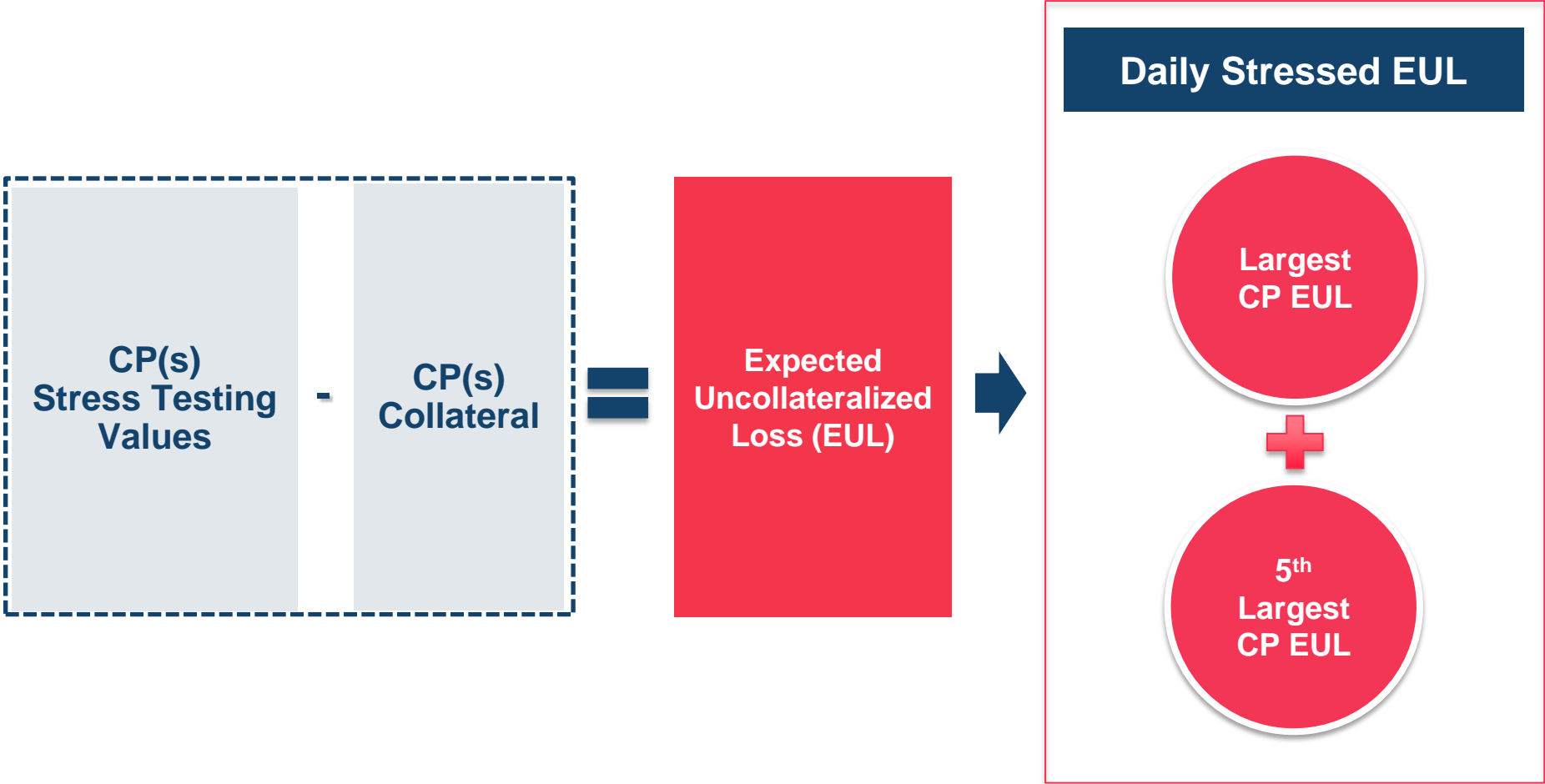
Potential price collapse / surge of individual position(s) in a portfolio





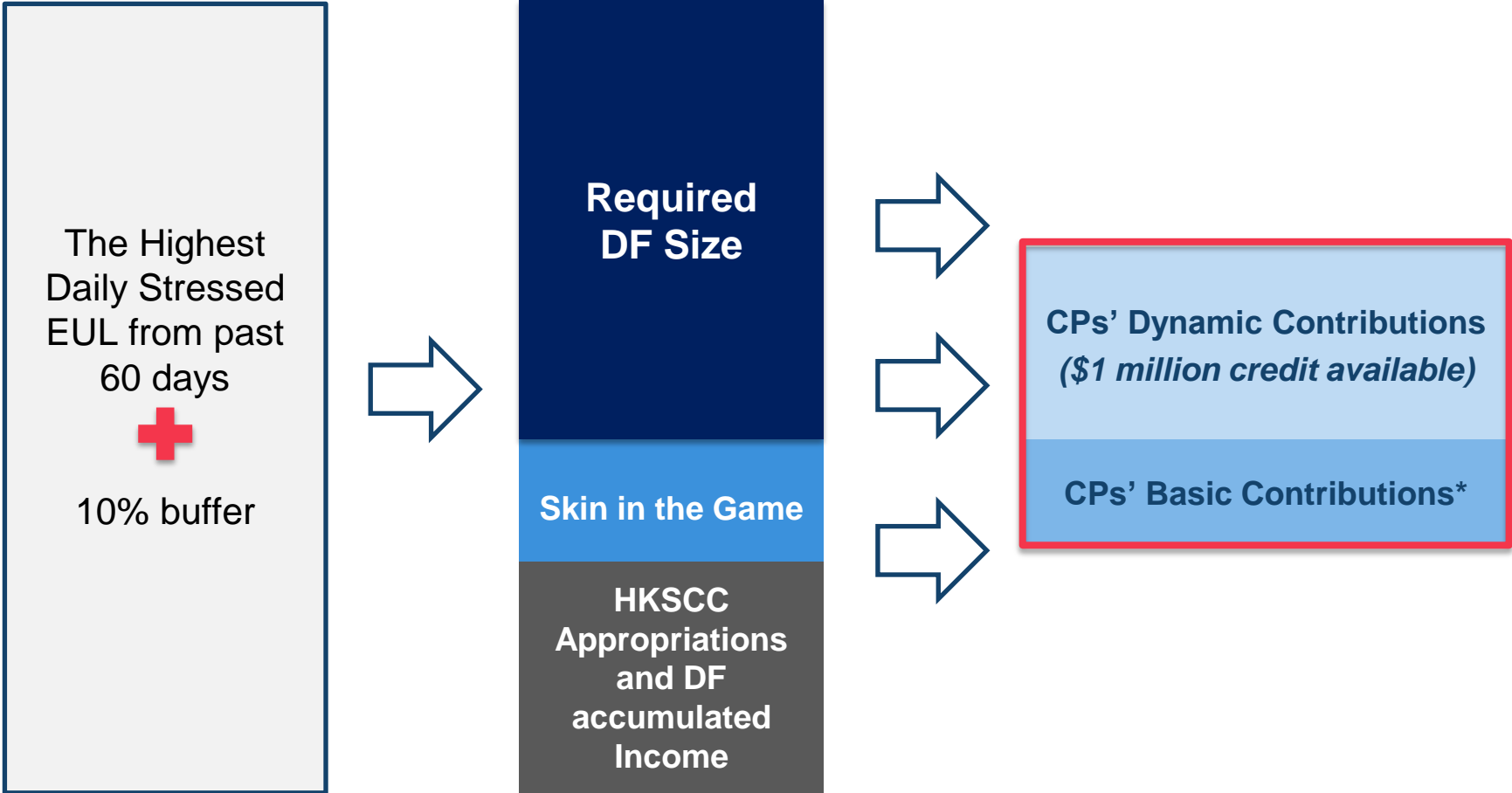
DEFAULT FUND SIZING

Daily Stress Testing



*Subject to finalization with SFC

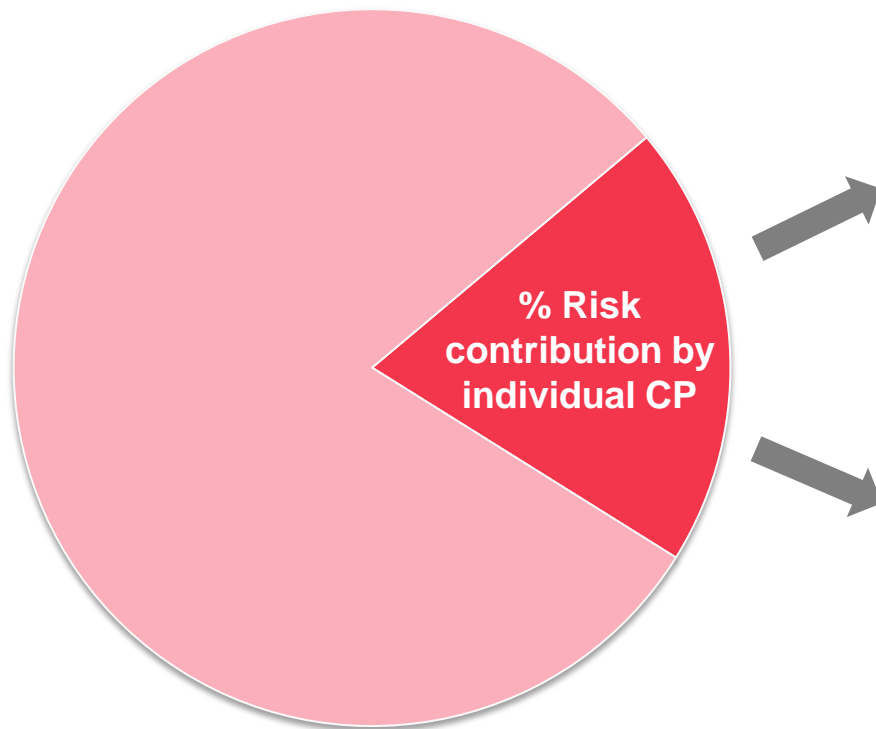
Default Fund size determination



* Total minimum Basic contribution is \$100m
* Subject to finalization with SFC

Allocation of DF contributions

Risk-based allocation



Overall risk (EUL) of all CPs

CP Basic Contribution* =

$$\begin{aligned} &\sim\text{HK\$100 million} \\ &\quad \times \\ &\quad \% \text{ Average 60 days EUL} \\ &\quad (\% \text{ Risk contribution}) \end{aligned}$$

** Subject to minimum requirement of trading rights*

CP Dynamic Contribution# =

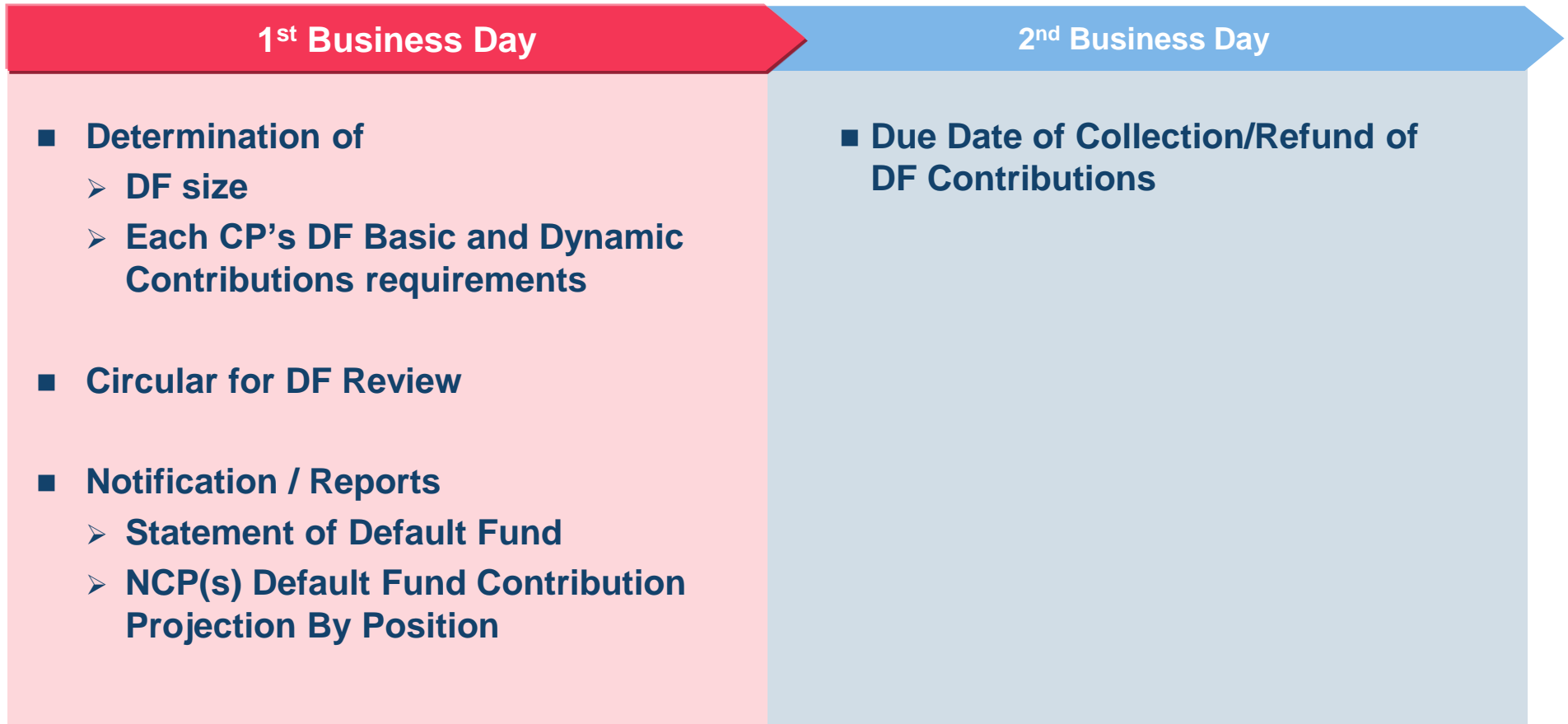
$$\begin{aligned} &\text{Overall Dynamic Contribution} \\ &\quad \times \\ &\quad \% \text{ Average 60 days EUL} \\ &\quad (\% \text{ Risk contribution}) \end{aligned}$$

HK\\$1 million credit available for each CP



Collection / Refund of DF Contributions - Schedule

Monthly Review	1 st business day of every month
Ad hoc Review	When market condition warrants



Contact us at
margin_modelling@hkex.com.hk
for further questions/feedback

