



恒生指數
HANG SENG INDEXES

Strategy Index Methodology General Guide

For Managing the
Hang Seng Family of Indexes



Amendment History

	Date	Description
1.0	March 2022	First Issue
2.0	Jun 2022	Added Quanto FX Adjusted Indexes, Risk Adjusted Indexes, Short and Leverage Indexes, Futures Short and Leverage Indexes
2.1	Aug 2025	Added Target Premium Covered Call Indexes



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1 Introduction

This document outlines the formulas for the calculation of Strategy Indexes in the Hang Seng Family of Indexes.

Please read this Strategy Index Methodology General Guide in conjunction with the individual index methodology, as well as other index guides and policies which are published on our website.

- Index Methodology General Guide
- Index Operation Guide
- Key Terms Definitions
- Index Design Review Policy
- Index Consultation Policy
- Index Termination Policy
- Potential Limitation on Index Usage



2 Management Responsibilities

Hang Seng Indexes Company Ltd (“HSIL”)

HSIL is responsible for conducting regular reviews according to the Index Methodology.

HSIL is responsible for monitoring company announcements and making ad hoc proposals if constituent changes between the regular reviews are needed.

HSIL is responsible for seeking the HSIL Index Governance Committee’s endorsement of any special action in cases where, due to exceptional circumstances, an index review is not conducted according to the Index Methodology.

HSIL is responsible for seeking the HSIL Index Governance Committee’s endorsement of changes to the Index Methodology.

HSI Advisory Committee

When a change to the index methodology is considered material, i.e. affecting the principles/ objectives of the index construction; or resulting changes in the rules impacting the index universe, constituent selection and their weightings, as per agreement by the HSIL Index Governance Committee, it will be brought to the HSI Advisory Committee for advice.



3 Futures Indexes

3.1 Overview

3.1.1 Futures Indexes aim to reflect the performance of a portfolio which holds the spot month futures contract and perform rolling on a monthly basis. The Rolling takes place in the rolling schedule as specified by the individual index.

3.2 Calculation of Futures Indexes

3.2.1 The formula of the Futures Indexes is set out below:

$$\text{Index}_t = \text{Index}_{t-1} \times (1 + R_t) \quad (\text{FUT.1})$$

where

t, t-1 = Current and previous index calculation days respectively

R_t = Return of the Futures Index on day t

3.2.2 When t is a Non-Rolling Day other than the Last Trading Date of the Spot Month Contract:

The index holds only the spot month contract. The return of the Futures Indexes is calculated from the price change of spot month contracts:

$$R_t = \frac{P_{S,t}}{P_{S,t-1}} - 1 \quad (\text{FUT.2})$$

3.2.3 When t is the Last Trading Date of the Spot Month Contract:

The index holds only the next month contract. The return of the Futures Indexes is calculated from the price change of next month contracts:

$$R_t = \frac{P_{N,t}}{P_{N,t-1}} - 1 \quad (\text{FUT.3})$$



3 Futures Indexes

3.2.4 When t is a Rolling Day:

The index holds both the spot month contract and next month contract. The return of the Futures Indexes is calculated from:

- the price change of spot month contracts;
- the price change of next month contracts; and
- the gain / loss from rolling the spot month contracts to the next month contracts

The Futures Indexes assume that the rolling of futures contract is carried on throughout the whole day using the Volume Weighted Average Price ("VWAP"). The rolling gain / loss is reflected by the number of contracts to be rolled and the difference in VWAP of the spot and next month futures contracts.

$$R_t = \frac{P_{S,t} \times W_{S,t} + P_{N,t} \times W_{N,t} + (P_{S_VWAP,t} - P_{N_VWAP,t}) \times W_{R,t}}{P_{S,t-1} \times W_{S,t-1} + P_{N,t-1} \times W_{N,t-1}} - 1 \quad (\text{FUT.4})$$

where

- R_t = Return of futures index on day t
- $P_{S,t}$ = Price of spot month futures contract on day t
- $P_{N,t}$ = Price of next month futures contract on day t
- $P_{S_VWAP,t}$ = Volume Weighted Average Price of spot month futures contract on day t
- $P_{N_VWAP,t}$ = Volume Weighted Average Price of next month futures contract on day t
- $W_{S,t}$ = Weight of number of spot month futures contract on day t
- $W_{N,t}$ = Weight of number of next month futures contract on day t
- $W_{R,t}$ = Weight of number of contracts to be rolled on day t



3 Futures Indexes

3.3 Calculation of Futures FX Indexes

Futures FX Indexes includes FX return for the initial cash outlay of a funded investment in a foreign currency, with the assumption that the margin value of holding the futures contracts is zero.

3.3.1 The return of the Futures FX Indexes is calculated from:

- the price change of spot month contracts;
- the price change of next month contracts;
- the gain / loss arising from rolling the spot month contracts to the next month contracts; and
- the change in value of the FX rate

3.3.2 The formula of the Futures FX Indexes is set out below:

$$\text{Index}_t = \text{Index}_{t-1} \times (1 + R_t + \text{CR}_t) \quad (\text{FUT.5})$$

where

$$\text{CR}_t = \frac{\text{FX}_t}{\text{FX}_{t-1}} - 1$$

t, t-1 = Current and previous index calculation days respectively

Index_t = The index level of the Futures FX index on day t

R_t = Return of the Futures Index on day t; Refer to Section "Calculation of Futures Indexes"

FX_t = Spot FX rate in terms of units of index currency per unit of foreign currency on day t



4 Covered Call Indexes

4.1 Overview

- 4.1.1 Covered Call Indexes aim to replicate the performance of a portfolio which holds a long position in the underlying index and writes call options on the underlying index on regular basis. Monthly and weekly call options are used for monthly and weekly Covered Call Indexes respectively.
- 4.1.2 Option premiums are reinvested into the strategy for Price Return Version of the Covered Call Indexes, while for Net Total Return Version both option premiums and dividends are reinvested.
- 4.1.3 With respect to the coverage ratio of option to index positions at each option rolling, two types of Covered Call Indexes are available, namely the Fixed Coverage Ratio Covered Call Index which uses a pre-specified coverage ratio, and the Target Premium Covered Call Index in which the number of options to write is determined so as to aim for a target premium yield.



4 Covered Call Indexes

4.2 Calculation of Covered Call Indexes

4.2.1 The formulas for the Price Return Version and the Net Total Return Version are set out below:

Price Return:

$$\text{Index}_t = \text{Index}_{t-1} \times \left(\frac{\text{PI}_t - \text{AdjR}_{\text{te}(t)} \times c_t}{\text{PI}_{t-1} - \text{AdjR}_{\text{te}(t)} \times c_{t-1}} \right) \quad (\text{CVC.1})$$

Net Total Return:

$$\text{Index}_t = \text{Index}_{t-1} \times \left(\frac{\text{PI}_t - \text{AdjR}_{\text{te}(t)} \times c_t}{\text{PI}_{t-1} - \text{AdjR}_{\text{te}(t)} \times c_{t-1} - D_t} \right) \quad (\text{CVC.2})$$

where

- t, t-1 = Current and previous index calculation days respectively
- te(t) = The option expiry day prior to day t. This is the previous option rolling date.
- Index_t, = The index level of covered call index on day t
- PI_t = The index level of underlying index on day t
- c_t = Last trading price of front call option on day t.

Note:

1. For the index calculation on day t, if there has been no trading in the respective call option in such day, the official quotation price published by the exchange for day t-1 will be used.
2. If day t is the front option expiry day, the final settlement price of the front call option would be adopted at the closing of expiry day t.
3. For the avoidance of doubt, in the index calculation on day t, both c_t and c_{t-1} refer to the front option at day t.

- D_t = Total net dividends of the underlying index that go ex-div on day t in index points
- AdjR_{te(t)} = The Adjustment Ratio determined on day te(t). This is the number of new call options to roll into on day te(t).



4 Covered Call Indexes

Fixed Coverage Ratio Covered Call:

$$\text{AdjR}_{te(t)} = \text{NR}_{te(t)} \times \text{FixedCR}$$

$$\text{NR}_{te(t)} = \text{Notional Ratio on day } te(t)$$

$$= \frac{\text{PI}_{te(t)}}{\text{OPI}_{te(t)}}$$

$$\text{OPI}_{te(t)} = \text{The index level of option underlying index on day } te(t)$$

$$\text{FixedCR} = \text{Fixed Coverage Ratio. Default to 100\% unless otherwise specified}$$

Target Premium Covered Call:

$$\text{AdjR}_{te(t)} = \text{NR}_{te(t)} \times \text{TgtPremCR}_{te(t)}$$

$$\text{NR}_{te(t)} = \text{Notional Ratio on day } te(t)$$

$$= \frac{\text{PI}_{te(t)}}{\text{OPI}_{te(t)}}$$

$$\text{TgtPremCR}_{te(t)} = \text{Target Premium Coverage Ratio on day } te(t)$$

$$= \text{Min} \left(1, \frac{\text{AnnTgtPremYld} / n}{\text{PremYld}_{te(t)}} \right)$$

$$\text{AnnTgtPremYld} = \text{Annual Target Premium Yield}$$

$$n = 12 \text{ for monthly Covered Call Index, or } 52 \text{ for weekly Covered Call Index}$$

$$\text{PremYld}_{te(t)} = \frac{\text{Last trading price of new call option to roll into on day } te(t)}{\text{OPI}_{te(t)}}$$



4 Covered Call Indexes

4.3 Rolling of Call Options

- 4.3.1 On the last trading day of the front call option, the to-be-expired front option is settled and new call option which is to be expired in the next expiry date is written.
- 4.3.2 The strike level of the next call options to be written is determined on the last trading day of the to-be-expired front option by the following formula:

$$\text{Strike Level} = \text{roundup} \left(\frac{\text{OPI} \times (1 + x_m)}{\text{Strike Interval}} \right) \times \text{Strike Interval} \quad (\text{CVC.3})$$

where

- x_m = % out-of-the-money (e.g. 0% for ATM options)
- OPI = Closing index level of option underlying index
- Strike Interval = Difference between each strike level of options, with reference to the strike interval information disclosed by the listing exchange of the option



5 Currency Hedged Indexes

5.1 Overview

5.1.1 Currency Hedged Indexes are designed to hedge against currency risk that domestic investors are exposed to when they invest in assets denominating in foreign currency.

5.2 Calculation of Daily Currency Hedged Indexes

5.2.1 Each of the Hang Seng Daily Currency Hedged Indexes is calculated from price changes of the underlying index and the hedging returns based on the overnight currency forward rates.

5.2.2 The formula is set out below:

$$IL_t = IL_{t-1} \times \left[\frac{UHP_t}{UHP_{t-1}} + \frac{IL_{t-2}}{IL_{t-1}} \times FX_{t-2} \times \left(\frac{1}{FF_{t-1}} - \frac{1}{FX_t} \right) \times HR \right] \quad (\text{CCH.1})$$

where

t, t-1, t-2 = Index calculation days t, t-1 and t-2 respectively

IL_t = Hedged index level on day t

UHP_t = Closing index level of the underlying index in Hedged Currency on day t

$$= \frac{CP_t}{FX_t}$$

CP_t = Closing index level of the underlying index in Foreign Currency on day t

FX_t = Spot FX rate in terms of units of Foreign Currency per unit of Hedged Currency on day t

$$= \frac{USD_{F_t}}{USD_{H_t}}$$

USD_{F_t} = Spot FX rate in terms of units of Foreign Currency per unit of USD on day t

USD_{H_t} = Spot FX rate in terms of units of Hedged Currency per unit of USD on day t

FF_t = 1-day forward FX rate in terms of units of Foreign Currency per unit of Hedged Currency on day t

$$= \frac{USD_{Fwd_{F_t}}}{USD_{Fwd_{H_t}}}$$

$USD_{Fwd_{F_t}}$ = 1-day forward FX rate in terms of units of Foreign Currency per unit of USD on day t

$USD_{Fwd_{H_t}}$ = 1-day forward FX rate in terms of units of Hedged Currency per unit of USD on day t

HR = Hedging Ratio; it is set as 1 by default



5 Currency Hedged Indexes

5.3 Calculation of Monthly Currency Hedged Indexes

5.3.1 Each of the Hang Seng Monthly Currency Hedged Indexes is calculated from price changes of the underlying index and the short position in the 1-month currency forward contract.

5.3.2 The formula is set out below:

$$IL_t = IL_{t_r(t)} \times \left[\frac{UHP_t}{UHP_{t_r(t)}} + \frac{IL_{t_r(t)-1}}{IL_{t_r(t)}} \times FX_{t_r(t)-1} \times \left(\frac{1}{FF_{t_r(t)}} - \frac{1}{IFF_t} \right) \times HR \right] \quad (\text{CCH.2})$$

where

t = Current index calculation day

$t_r(t)$ = Latest Hedge Rebalancing Date; Last calculation date of the previous calendar month

$t_r(t) - 1$ = Latest Hedge Reference Date; the calculation date before latest Hedge Rebalancing Date

IL_t = Hedged index level on day t

UHP_t = Closing index level of the underlying index in Hedged Currency on day t

$$= \frac{CP_t}{FX_t}$$

CP_t = Closing index level of the underlying index in Foreign Currency on day t

FX_t = Spot FX rate in terms of units of Foreign Currency per unit of Hedged Currency on day t

$$= \frac{USD_F_t}{USD_H_t}$$

USD_F_t = Spot FX rate in terms of units of Foreign Currency per unit of USD on day t

USD_H_t = Spot FX rate in terms of units of Hedged Currency per unit of USD on day t

FF_t = 1-day forward FX rate in terms of units of Foreign Currency per unit of Hedged Currency on day t

$$= \frac{USD_Fwd_F_t}{USD_Fwd_H_t}$$

$USD_Fwd_F_t$ = 1-day forward FX rate in terms of units of Foreign Currency per unit of USD on day t

$USD_Fwd_H_t$ = 1-day forward FX rate in terms of units of Hedged currency per unit of USD on day t



5 Currency Hedged Indexes

- $Act(t_r(t), t)$ = The number of calendar days between $t_r(t)$ (included) and t (excluded)
- N_t = The number of calendar days between the latest Hedge Rebalancing Date (included) and the coming Hedge Rebalancing Date (excluded)
- IFF_t = The interpolated forward forex rate on day t ; It is expressed as units of Foreign Currency per unit of Hedged Currency
- = $FX_t + \left(1 - \frac{Act(t_r(t), t)}{N_t}\right) \times (FF_t - FX_t)$
- HR = Hedging Ratio; It is set as 1 by default



6 Decrement Indexes

6.1 Overview

6.1.1 Decrement Indexes are designed to replicate the performance of an underlying index with a pre-determined level of performance deduction over time. Decrement can be based on a fixed percentage or a fixed index points. The floor of the index level for Decrement Indexes is zero¹.

6.2 Calculation of Fixed Percentage Decrement

6.2.1 Index Form

The formula for the Index Form of Fixed Percentage Decrement is set out below:

$$\text{DecrIndex}_t = \text{DecrIndex}_{t-1} \times \left(\frac{\text{UI}_t}{\text{UI}_{t-1}} - \text{DecrRate} \times \frac{\text{Act}(t-1, t)}{365} \right) \quad (\text{DCM.1})$$

where

- t, t-1 = Current and previous index calculation days respectively
- DecrIndex_t = Decrement index level on day t
- UI_t = Underlying index level on day t
- DecrRate = Fixed percentage decrement rate per annum
- Act(t-1, t) = The number of calendar days between t-1 (included) and t (excluded)

6.2.2 Return Form

The formula for the Return Form of Fixed Percentage Decrement is set out below:

$$\text{DecrRtn}_t = \text{PreDecrRtn}_t - \text{DecrRate} \times \frac{\text{Act}(t-1, t)}{365} \quad (\text{DCM.2})$$

where

- t, t-1 = Current and previous index calculation days respectively
- DecrRtn_t = Post-decrement return on day t
- PreDecrRtn_t = Pre-decrement return on day t
- DecrRate = Fixed percentage decrement rate per annum
- Act(t-1, t) = The number of calendar days between t-1 (included) and t (excluded)

¹ For indexes involving Decrement Indexes, in the situation where the floor index level of zero is reached, the index will remain at zero and the dissemination of the index will be suspended.



6 Decrement Indexes

6.3 Calculation of Fixed Point Decrement

6.3.1 Index Form

The formula for the Index Form of Fixed Point Decrement is set out below:

$$\text{DecrIndex}_t = \text{DecrIndex}_{t-1} \times \frac{\text{UI}_t}{\text{UI}_{t-1}} - \text{DecrPoint} \times \frac{\text{Act}(t-1, t)}{365} \quad (\text{DCM.3})$$

where

t, t-1 = Current and previous index calculation days respectively

DecrIndex_t = Decrement index level on day t

UI_t = Underlying index level on day t

DecrPoint = Fixed decrement index points per annum

Act(t-1, t) = The number of calendar days between t-1 (included) and t (excluded)



7 Quanto FX Adjusted Indexes

7.1 Overview

7.1.1 The Quanto FX Adjusted Indexes aim to reflect the performance of an underlying index in base currency, and to incorporate the currency return with the return in the underlying index investment.

7.2 Calculation of Quanto FX Adjusted Indexes

7.2.1 The formula for the Quanto FX Adjusted Indexes is set out below:

$$\text{Index}_t = \text{Index}_{t-1} \times \left[\frac{\text{UI}_t}{\text{UI}_{t-1}} + \left(\frac{\text{UI}_t}{\text{UI}_{t-n}} - 1 \right) \times \left(\frac{\text{FX}_t}{\text{FX}_{t-1}} - 1 \right) \right] \quad (\text{QFX.1})$$

where

Index_t = Index level on day t

UI_t = Closing index level of the underlying index on day t

FX_t = FX fixing on the day t in terms of units of Adjusted Currency per unit of Underlying Index Currency

$$= \frac{\text{USD_AC}_t}{\text{USD_UC}_t}$$

USD_AC_t = Units of Adjusted Currency per unit of USD on day t

USD_UC_t = Units of Underlying Index Currency per unit of USD on day t

n = Number of trading days window for the calculation of the underlying index return



8 Risk Adjusted Indexes

8.1 Overview

- 8.1.1 Risk Adjusted Indexes aim to track the return of a strategic portfolio with a predetermined risk level measured by volatility. The risk level of the portfolio is dynamically adjusted by varying the allocation between the underlying index and cash. When the realized volatility of the underlying index is high (low), lower (higher) exposure will be allocated to the underlying index. The Risk Adjusted Indexes are rebalanced on a daily basis.
- 8.1.2 The return of the Risk Adjusted Index comprises the return from the underlying index and the interest received or paid.
- 8.1.3 An excess return version of the Risk Adjusted Index is also available. The excess return version aims to measure the return of an unfunded investment in the Risk Adjusted Index, i.e. a portfolio comprising the Risk Adjusted Index which is 100% funded by short-term borrowings.

8.2 Calculation of Realized Volatility

- 8.2.1 The Realized Volatility is calculated using the Exponentially-weighting formula set out below:

$$\hat{\sigma}_t = \text{Max}(\hat{\sigma}_{S,t}, \hat{\sigma}_{L,t})$$

$$\hat{\sigma}_{j,t} = \sqrt{246 \times \text{Var}_{j,t}}$$

$$\text{Var}_{j,t} = \lambda_j \times \text{Var}_{j,t-1} + (1 - \lambda_j) \times \left[\ln \left(\frac{UI_t}{UI_{t-1}} \right) \right]^2$$

$$\text{Var}_{j,0} = \frac{\sum_{i=0}^{99} \lambda_j^i \times \left[\ln \left(\frac{UI_{0-i}}{UI_{0-(i+1)}} \right) \right]^2}{\sum_{i=0}^{99} \lambda_j^i}$$

where

- $\hat{\sigma}_t$ = Realized Volatility
- j = S (short-term), L (long-term)
- $\text{Var}_{j,t}$ = Variance of Period j on day t
- λ_j = Decay Factor of Period j
- λ_j^i = the i^{th} power of Decay Factor of period j

- 8.2.2 The Realized Volatility on day $t - d$ is used to determine the exposure to the underlying index on day t , where d is a parameter of the individual Risk Adjusted Index.



8 Risk Adjusted Indexes

8.3 Calculation of Risk Adjusted Indexes

8.3.1 The formula of Risk Adjusted Index is set out below:

$$RAI_t = RAI_{t-1} \times \left\{ 1 + \left[E_t \times \left(\frac{UI_t}{UI_{t-1}} - 1 \right) \right] + \left[(1 - E_t) \times \left(IR_{t-1} \times \frac{D_{t,t-1}}{365} \right) \right] \right\} \quad (RAI.1)$$

where

RAI_t	=	Index level at day t
UI_t	=	Underlying index level at day t
IR_{t-1}	=	Interest rate at day t – 1
$Act(t, t - 1)$	=	Number of calendar days between day t and day t – 1
E_t	=	Exposure to underlying index
	=	$\max \left[\min \left[Cap, \frac{\sigma}{\hat{\sigma}_{t-d}} \right], Floor \right]$
σ	=	Target Volatility
$\hat{\sigma}_{t-d}$	=	Realized Volatility at day t – d

8.4 Calculation of Risk Adjusted Indexes (Excess Return Version)

8.4.1 The formula of Risk Adjusted Index (Excess Return Version) is set out below:

$$RAIE_t = RAIE_{t-1} \times \left\{ 1 + \left[E_t \times \left(\frac{UI_t}{UI_{t-1}} - 1 \right) \right] + \left[(1 - E_t) \times \left(IR_{t-1} \times \frac{D_{t,t-1}}{365} \right) \right] - \left(BR_{t-1} \times \frac{D_{t,t-1}}{365} \right) \right\} \quad (RAI.2)$$

where

$RAIE_t$	=	Index level at day t
UI_t	=	Underlying index level at day t
IR_{t-1}	=	Interest rate at day t – 1
BR_{t-1}	=	Borrowing rate at day t – 1
$D_{t,t-1}$	=	Number of calendar days between day t and day t – 1
E_t	=	Exposure to underlying index
	=	$\max \left[\min \left[Cap, \frac{\sigma}{\hat{\sigma}_{t-d}} \right], Floor \right]$
σ	=	Target Volatility
$\hat{\sigma}_{t-d}$	=	Realized Volatility at day t – d



9 Short and Leveraged Indexes

9.1 Overview

- 9.1.1 The Short and Leveraged Indexes aim to replicate the performance of a short or leveraged portfolio, and can be used as the basis of exchange-traded funds and derivatives.
- 9.1.2 Short Indexes reflect the reverse return of the underlying index with a leverage factor. In addition to the reverse performance, the Short Indexes also yield the overnight interest income and reflect the dividends payable in shorting stocks as well as the stamp duty entailed in portfolio rebalancing.
- 9.1.3 Leveraged Indexes reflect the movements of the underlying index with a leverage factor. In addition to the amplified return, the borrowing cost for the leveraged investment in stocks and the stamp duty entailed in portfolio rebalancing are also reflected in the index.

9.2 Calculation of Short Indexes

- 9.2.1 The formula of Short Indexes is set out below:

$$\text{Index}_t = \text{Index}_{t-1} \times (1 + \text{Short Index Return}) \quad (\text{SLI.1})$$

where

Short Index Return = Reverse Return + Interest Income – Stamp Duty Expense

$$\text{Reverse Return} = -K \times \left(\frac{\text{TRI}_t}{\text{TRI}_{t-1}} - 1 \right)$$

$$\text{Interest Income} = (K + 1) \times \left(\frac{\text{IR}_{t-1}}{365} \right) \times D_{t,t-1}$$

$$\text{Stamp Duty Expense} = K \times (K + 1) \times \left| \frac{\text{TRI}_t}{\text{TRI}_{t-1}} - 1 \right| \times \text{Stamp Duty}$$

K = A multiple reflecting the short ratio (e.g. K=2 for 2x short)

$D_{t,t-1}$ = Number of calendar days between day t and day t – 1

IR_{t-1} = Interest rate at day t – 1

TRI_t = Current Index level of the total return index of the underlying index during day t

TRI_{t-1} = Closing level of the total return index of the underlying index at day t – 1

Stamp Duty = Rate of Stamp Duty as a percentage of the amount of stock traded



9 Short and Leveraged Indexes

9.3 Calculation of Leveraged Indexes

9.3.1 The formula of Leveraged Indexes is set out below:

$$\text{Index}_t = \text{Index}_{t-1} \times (1 + \text{Leveraged Index Return}) \quad (\text{SLI.2})$$

where

Leveraged Index Return = Amplified Return – Interest Expense – Stamp Duty Expense

$$\text{Amplified Return} = K \times \left(\frac{\text{UI}_t}{\text{UI}_{t-1}} - 1 \right)$$

$$\text{Interest Expense} = (K - 1) \times \left(\frac{\text{IR}_{t-1}}{365} \right) \times D_{t,t-1}$$

$$\text{Stamp Duty Expense} = K \times (K - 1) \times \left| \frac{\text{UI}_t}{\text{UI}_{t-1}} - 1 \right| \times \text{Stamp Duty}$$

- K = A multiple reflecting the leverage ratio
- $D_{t,t-1}$ = Number of calendar days between day t and day $t - 1$
- IR_{t-1} = Interest rate at day $t - 1$
- UI_t = Current Index level of the underlying index during day t
- UI_{t-1} = Closing level of the underlying index at day $t - 1$
- Stamp Duty = Rate of Stamp Duty as a percentage of the amount of stock traded



10 Futures Short and Leveraged Indexes

10.1 Overview

10.1.1 Each index in the Futures Short and Leveraged Indexes aim to replicate the performance of a short and leveraged strategy on an underlying futures index.

10.2 Calculation of Futures Short and Leveraged Indexes

10.2.1 The formula of each Futures Short or Futures Leveraged Index is set out below:

$$\text{Index}_t = \text{Index}_{t-1} \times (1 + \text{Short or Leveraged Return} + \text{Interest Income}) \quad (\text{FSL.1})$$

where

$$\text{Short or Leveraged Return} = K \times \left(\frac{F_t}{F_{t-1}} - 1 \right)$$

$$\text{Interest Income} = (1 - |K| \times M) \times \left(\frac{\text{IR}_{t-1}}{365} \right) \times D_{t,t-1}$$

K = A multiple reflecting the leverage ratio. K is positive for leveraged index and negative for short index

M = Margin of the underlying futures
= $\frac{\text{Initial margin published by Hong Kong Exchanges and Clearing Limited}}{\text{Previous day's closing underlying index level} \times \text{contract multiplier}}$

$D_{t,t-1}$ = Number of calendar days between day t and day t – 1

IR_{t-1} = Interest rate at day t – 1

F_t = Current Index level of the underlying futures index during day t

F_{t-1} = Closing index level of the underlying futures index at day t – 1



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