# Asian & Cliquet Style Settlement for FLEX® Index Options

## What are Asian and Cliquet FLEX Index Options?

Insurance companies that write indexed annuity contracts often have exotic option liabilities embedded within those annuity contracts. Two common types of exotic options are Asian (sometimes referred to as averaging options because their settlement values are based on an average of the underlying index throughout the contract's life) and Cliquet (sometimes referred to as contracts with a monthly sum cap with a global floor because their payoff is the greater of zero or the sum of monthly capped returns of an index over a year). Insurance companies seeking to hedge embedded exotic option risk have historically traded exclusively in the over-the-counter (OTC) market. The introduction of Asian and Cliquet FLEX Index options will provide insurers with an alternative hedging tool to OTC market products, coupled with traditional exchange-traded benefits like enhanced price discovery, transparency and centralized clearing.

## How are Asian FLEX Index Options Different from Cliquet FLEX Index Options?

Both Asian and Cliquet FLEX Index options have a term of approximately one year with 12 monthly observation dates, but each contract type has a different method for determining the exercise settlement value. Below are key contract specifications for Asian and Cliquet FLEX Index options in which terms that are highlighted in gray differ. Please see the working examples of each option type on the following page.

| | ASIAN FLEX | CLIQUET FLEX |
|---|---|---|
| **Underlying:** | Indices only, including, but not limited to: SPX, RUT, DJX, XSP, MXEA, MXEF. | Indices only, including, but not limited to: SPX, RUT, DJX, XSP, MXEA, MXEF. |
| **Expiration Date:** | Approximately one year and may expire anytime from 350 – 371 days after initial listing. | Approximately one year and may expire anytime from 350 – 371 days after initial listing. |
| **Monthly Observation Date:** | The date of each month on which the closing price of the underlying index is observed for the purpose of calculating the exercise settlement value. | The date of each month on which the closing price of the underlying index is observed for the purpose of calculating the exercise settlement value. |
| **Strike Prices:** | May be specified as an index level or as a percentage. | Cliquet FLEX options do not have traditional strike prices. Operationally, the "strike price" field represents the designated capped monthly return, ranging from 0.05% – 25.00%, in 5 basis point increments |
| **Preceding Business Day Convention:** | If the observation date falls on a weekend or holiday, the previous business day will be used. | If the observation date falls on a weekend or holiday, the previous business day will be used. |
| **Exercise Settlement Value** | The arithmetic average of the closing prices of the underlying index on 12 pre-determined, consecutive monthly observation dates. | The greater of:<br>0,<br>or<br>[(closing price of the underlying index on the initial trade date) * (sum of the monthly capped returns)] + strike price |
| **Contract Multiplier:** | $100 | $100 |
| **Exercise Style:** | European, P.M. | European, P.M. |

## Working Example: Asian FLEX Index Options

The following example assumes:

- Underlying index = SPX
- Trade date = January 21, 2015
- Observation dates = 23rd of each month
- Expiration date = January 22, 2016
- Asian strike price = 100%, or 2000.00

**The observation dates highlighted in gray indicate dates where the 23rd of the month was a weekend and therefore the previous business day was used. Not actual SPX closing prices.**

| | ASIAN |
|---|---|
| **Date** | **SPX close** |
| **1/21/2015** | 2000.00 |
| **2/23/2015** | 2025.36 |
| **3/23/2015** | 2049.34 |
| **4/23/2015** | 2019.77 |
| **5/22/2015** | 1989.65 |
| **6/23/2015** | 2005.64 |
| **7/23/2015** | 2035.10 |
| **8/21/2015** | 2032.15 |
| **9/23/2015** | 2076.18 |
| **10/23/2015** | 2099.01 |
| **11/23/2015** | 2109.32 |
| **12/23/2015** | 2085.42 |
| **1/22/2016** | 2084.81 |
| **Exercise Settlement Value (ESV)** | **2050.98** |

The Asian ESV of 2050.98 is the average of the 12 SPX closing prices listed between 2/23/15 – 1/22/16.

| | |
|---|---|
| **ESV** | 2050.98 |
| **Strike** | 2000.00 |
| **ESV-Strike** | 50.98 |
| **Payout*** | $5,098.00 |

*Payout = (ESV-Strike) * 100

# Asian & Cliquet Style Settlement for FLEX® Index Options

## Working Example: Cliquet FLEX Index Options

The following example assumes:

- Underlying index = SPX
- Trade date = January 21, 2015
- Observation dates = 23rd of each month
- Expiration date = January 22, 2016
- Asian strike price = 100%, or 2000.00
- Theoretical strike price = $2
- Cliquet monthly cap = 2%

**The observation dates highlighted in gray indicate dates where the 23rd of the month was a weekend and therefore the previous business day was used. The return highlighted in blue indicates that the monthly cap was exceeded. Not actual SPX closing prices.**

| | CLIQUET | |
|---|---|---|
| **Date** | **Return** | **Capped Return** |
| 1/21/2015 | | |
| 2/23/2015 | 1.27% | 1.27% |
| 3/23/2015 | 1.18% | 1.18% |
| 4/23/2015 | -1.44% | -1.44% |
| 5/22/2015 | -1.49% | -1.49% |
| 6/23/2015 | 0.80% | 0.80% |
| 7/23/2015 | 1.47% | 1.47% |
| 8/21/2015 | -0.14% | -0.14% |
| 9/23/2015 | 2.17% | 2.00% |
| 10/23/2015 | 1.10% | 1.10% |
| 11/23/2015 | 0.49% | 0.49% |
| 12/23/2015 | -1.13% | -1.13% |
| 1/22/2016 | -0.03% | -0.03% |
| **Exercise Settlement Value (ESV)** | | **83.60** |

The sum of monthly capped returns (4.08% = .0408) is multiplied by the underlying index value at the close of the trade date: .0408 * 2000 = 81.60. A floor of 0 is applied: max[0, 81.60] = 81.60. A theoretical strike price is added to calculate the ESV: ESV = 81.60 + 2 = 83.60.

| | |
|---|---|
| **ESV** | 83.60 |
| **Theoretical Strike Price (TSP)** | 2.00 |
| **ESV-TSP** | 81.60 |
| **Payout*** | $8,160.00 |

*Payout = 100 * (ESV-Theoretical Strike Price)

Note that the Options Clearing Corporation needs to subtract some positive strike price from the ESV to process and clear the Cliquet. This strike price is purely theoretical and is offset by adding it when calculating the ESV.

## Potential Benefits of Asian and Cliquet FLEX Index Options Over OTC Exotic Options

**Better pricing and deeper liquidity**

**Efficient and reliable liability protection**

**Greater transparency**

**Reduced counter-party risk and centralized clearing**

For more information, visit www.cboe.com/FLEX

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