Dynamic Price Banding Mechanism of Foreign Equity Index Futures

Invigorating Futures Trading and Serving the Real Economy

Fulfilling Hedging Needs and Facilitating Price Discovery

Taiwan Futures Exchange

September 2019

Outline

- Purpose
- Introduction

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- **Reduce abnormal price fluctuations by preventing erroneous trades, fat finger incidents and momentary intraday order book imbalances**
- **Enhance market integrity**
- **Stay in line with global markets**

Introduction

Applicable products

- **Phase-one products (Launched on 22th January 2018)**
  - **TAIEX Futures and Mini-TAIEX Futures: Spot month contracts, next calendar month contracts and the calendar spread orders composed of a spot month contract and the next calendar month contract of.**

- **Phase-two products (Launched on 19th November 2018):**
  - **All Domestic Equity Index Futures:The spot month, the next two calendar months, and the next three quarterly months and calendar spread.**

- **Phase-three products (Launched on 27th May 2019):**
  - **All contract months of TAIEX Options.**

- **Phase-four products (TAIFEX will launch on 30th September 2019):**
  - **All contract months and calendar spread of TOPIX Futures, DJIA Futures, S&P 500 Futures and Nasdaq 100 Futures.**

Applicable trading time

■ TOPIX Futures

Regular Trading Session	Opening Call Auction (7:45 ~ 8:00)	Not Applicable
	Continuous Matching (8:00 ~ 16:15)	Applicable

■ DJIA Futures, S&P 500 Futures and Nasdaq 100 Futures

Regular Trading Session	Opening Call Auction (8:30 ~ 8:45)	Not Applicable
	Continuous Matching (8:45 ~ 13:45)	Applicable
After-Hour Trading Session	Opening Call Auction (14:50 ~ 15:00)	Not Applicable
	Continuous Matching (15:00 ~ next day 5:00)	Applicable

How dynamic price banding works

■ TAIFEX checks each new order[1] (including limit orders, market orders and market with protection orders[2]) and simulates matched prices based on the order book at the time.

   ◆ Buy Orders: simulated matched price > the upper limit of dynamic price band → reject order
   ◆ Sell Orders: simulated matched price < the lower limit of dynamic price band → reject order
   ◆ Only new orders that may cause abnormal price movements will be rejected; other transactions remain unaffected.

When simulated matched prices can't be generated for a newly submitted buy (sell) order because there is no existing counterparty sell (buy) order in the order book, TAIFEX will reject the buy (sell) order if the designated bid (offer) price of the buy (sell) order is above (below) the upper (lower) limit of TAIFEX's dynamic price band.
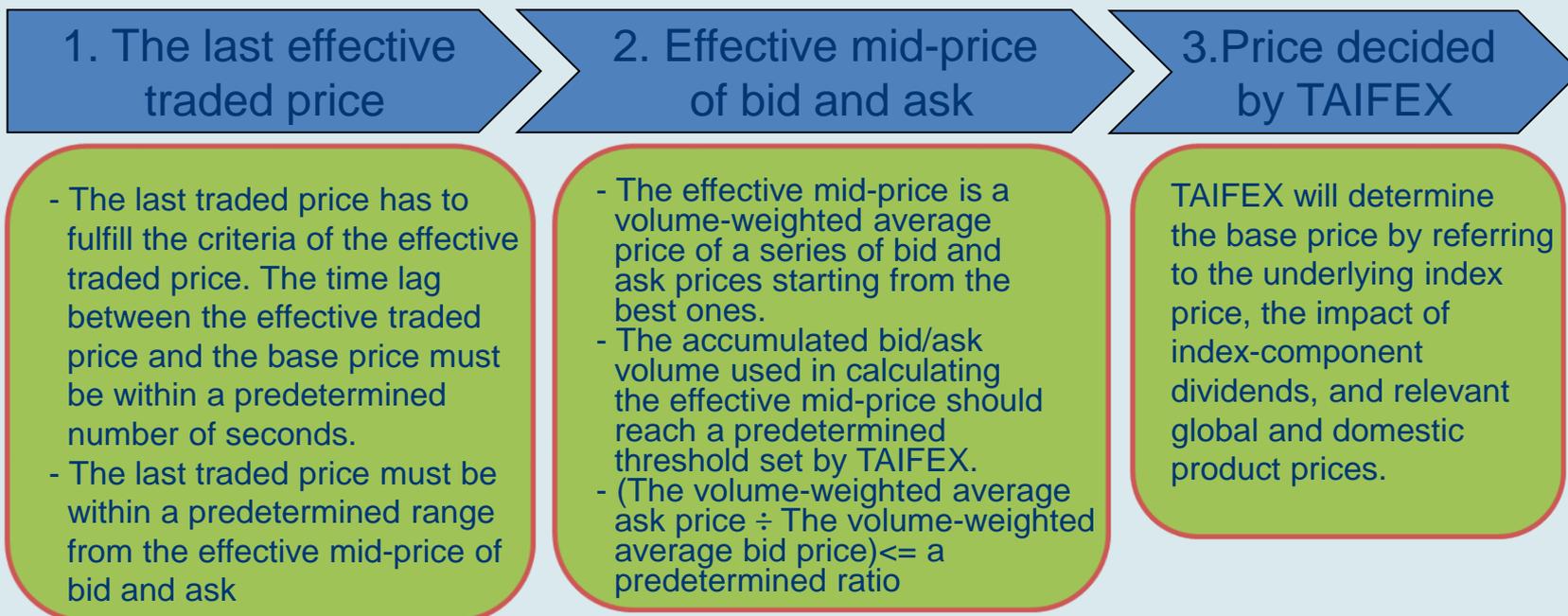
   1. Price modifications are treated as new orders and are subject to dynamic price banding.
   2. Implied orders constructed by TAIFEX' trading system are not actual orders and therefore not subject to dynamic price banding.

Calculation of the limits of dynamic price band

■ Upper limit : base price + Variation range

■ Lower limit : base price - Variation range

- • Ranges are calculated before market open every day.
- • The range is fixed for during the trading session.

■ Base price determination sequence

1. The last effective traded price	2. Effective mid-price of bid and ask	3.Price decided by TAIFEX

- The last traded price has to fulfill the criteria of the effective traded price. The time lag between the effective traded price and the base price must be within a predetermined number of seconds.
- The last traded price must be within a predetermined range from the effective mid-price of bid and ask

- The effective mid-price is a volume-weighted average price of a series of bid and ask prices starting from the best ones.
- The accumulated bid/ask volume used in calculating the effective mid-price should reach a predetermined threshold set by TAIFEX.
- (The volume-weighted average ask price ÷ The volume-weighted average bid price)<= a predetermined ratio

TAIFEX will determine the base price by referring to the underlying index price, the impact of index-component dividends, and relevant global and domestic product prices.

Calculation of the variation range

- **Variation Range**

  - ◆ Outright Month Contracts: the most recent daily settlement price of the nearest month contract of the foreign equity index futures $\times$ outright rejection threshold (2%)

  - ◆ Calendar Spread: the most recent daily settlement price of the nearest month contract of the foreign equity index futures $\times$ spread rejection threshold (1%)

- **Example: Assuming the most recent daily settlement price of the nearest month contract of DJIA Futures is 26,000 points:**

  - ◆ For the following after-hour trading session and regular trading session:

    - ➢ The variation range for outright contract is 520 points (=26,000 $\times$ 2%).

    - ➢ The variation range for calendar spread is 260 points (=26,000 $\times$ 1%).

Dynamic price banding with different order types

Order type	Treatment
Rest of Session (ROD)	■ Any portion of the order of which the simulated matched price is above (below) the upper (lower) limit of TAIFEX' dynamic price band will be rejected, while the remainder of the order with simulated matched prices within the dynamic price band will be executed.
Immediate or Cancel (IOC)	
Fill or Kill (FOK)	■ If any of the simulated matched prices are above (below) the upper (lower) limit of TAIFEX' dynamic price band, the whole order will be rejected.

- **Example: an investor submits a limit order to buy 5 lots of the TX spot month contract. The simulated matched prices of 4 lots are within the dynamic price band, while the simulated match price of 1 lot exceeds the upper limit.**

  - If the limit order is an ROD or IOC order: 4 lots will be executed, while 1 lot will be rejected.
  - If the limit order is an FOK order: the whole order (5 lots) will be rejected.

Other issues

- **Unusual market conditions: TAIFEX may adjust the variation range or suspend the dynamic price banding mechanism when necessary.**

  - ◆ Quantitative standards

    - ➢ When the futures trading volatility index reaching the limit set at TAIFEX' discretion, TAIFEX may announce adjustments to the variation range.

  - ◆ Non-Quantitative standards

    - ➢ In the event of a natural disaster, riot, war or other force majeure events that may affect the trading at TAIFEX, TAIFEX may announce adjustments to the variation range or the suspension of dynamic price banding.

    - ➢ For circumstances that may affect the normal operation of dynamic price banding, TAIFEX may announce the suspension of dynamic price banding.

    - ➢ For other circumstances deem necessary, TAIFEX may announce adjustments to the variation range.

Other issues(cont.)

- **System messages**

  - When an order is rejected due to dynamic price banding: the "simulated matched prices exceeded dynamic price banding" system message and "the upper limit/lower limit belonging to the rejected order" will be sent.

  - Adjustment to variation range: the "variation range relaxed" system message will be sent before market open or during trading hours.

  - Suspension of the dynamic price banding mechanism:

    - Qualitative indicators reached: the "dynamic price banding mechanism suspended" system message will be sent;

    - Suspension of dynamic price banding due to system failure: the "dynamic price banding mechanism suspended" system message will be sent. Once the system issue is resolved, the "dynamic price banding mechanism resumed" system message will be sent.

Thank You

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