

Dynamic Price Banding Mechanism of FX Futures

Invigorating Futures Trading and Serving the Real Economy
Fulfilling Hedging Needs and Facilitating Price Discovery

Taiwan Futures Exchange
March 2020

Outline

- Purpose
- FX futures dynamic price banding mechanism



Purpose

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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**



FX futures dynamic price banding mechanism

Applicable products

stage	Applicable products	Effective date
Phase 1	TAIEX Futures and Mini-TAIEX Futures: First month and second month contracts, and calendar spread order of first month and second month	2018/1/22
Phase 2	All contract months of Domestic Equity Index Futures	2018/11/19
Phase 3	All contract months of TAIEX options	2019/5/27
Phase 4	All contract months of Foreign Equity Index Futures	2019/9/30
Phase 5	All contract months of ETF Futures and FX Futures	2020/6/8(estimated)

Applicable trading time

■ USD/CNT, USD/CNH, EUR/USD, USD/JPY, GBP/USD AUD/USD FX Futures

Regular Trading Session	Opening Call Auction (8:30~8:45)	Not Applicable
	Continuous Matching (8:45~16:15)	Applicable
After-Hour Trading Session	Opening Call Auction (17:15~17:25)	Not Applicable
	Continuous Matching (17:25~next day 5:00)	Applicable

How dynamic price banding works

- TAIFEX checks each new order¹ (including limit orders, market orders and market with protection orders²) 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.

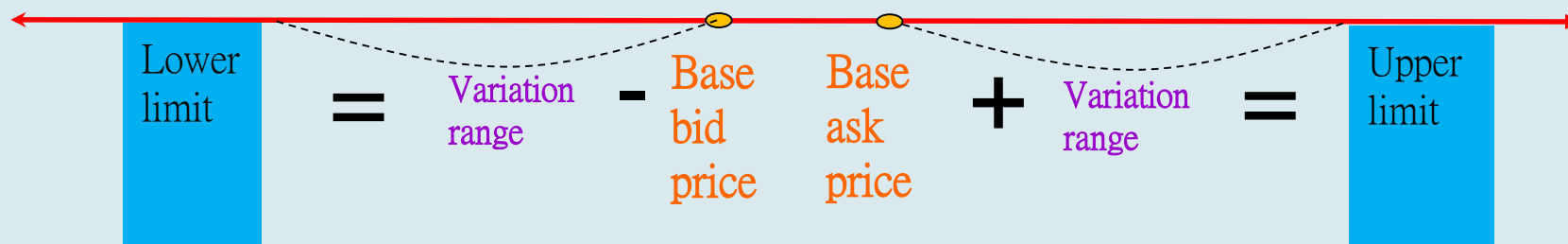
**When simulated matched prices can't be generated for a newly submitted buy (sell) order because there is no existing counterparty sell (buy) order in the order book, TAIFEX will reject the buy (sell) order if the designated bid (offer) price of the buy (sell) order is above (below) the upper (lower) 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 ask price** + Variation range
- Lower limit : **Base bid price** - Variation range

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



Base bid/ask price determination sequence (Outright Order)

Effective bid and ask price

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

Price decided by TAIFEX

TAIFEX will determine the base price by referring to the underlying foreign currency products prices.

Base bid/ask price (Calendar Spread Order)

- Base bid price = Longer-dated FX futures contract base bid price – Shorter-dated FX futures base sell price.
- Base sell price = Longer-dated FX futures contract base ask price – Shorter-dated FX futures base bid price.

Calculation of the Variation range

■ Variation range

- ◆ Outright Order: The most recent daily settlement price of the nearest month contract of the FX futures \times outright rejection threshold (2%)
- ◆ Calendar Spread Order: The most recent daily settlement price of the nearest month contract of the FX futures \times spread rejection threshold (1%)

■ Example: Assuming the most recent daily settlement price of the nearest month contract of USD/CNH Futures is 6.1234:

- ◆ For the following after-hour trading session and regular trading session:
 - The variation range for outright contract is 0.122468 points ($=6.1234 \times 2\%$).
 - The variation range for calendar spread is 0.061234 points ($=6.1234 \times 1\%$).

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 USD/CNT FX futures 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.**
- **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

Dynamic Price Banding Mechanism of ETF Futures

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- Introduction

A collage of various international banknotes including US, Euro, and Chinese currency, overlaid with a world map and a line graph. The word "Purpose" is centered in white text.

Purpose

Purpose

- 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

- All contract months and calendar spread of ETF Futures.

Futures Type	Ticker Symbol	Stock Code	Underlying Stock
Domestic ETF Futures	NY	0050	Yuanta/P-shares Taiwan Top 50 ETF
	PF	0056	Yuanta/P-shares Taiwan Dividend Plus ETF
Offshore ETF Futures	NZ	0061	W.I.S.E. Yuanta/P-shares CSI 300 ETF
	OA	006205	Fubon SSE180 ETF
	OB	006206	Yuanta/P-shares SSE50 ETF
	OC	006207	Fuh Hwa CSI300 A Shares ETF (FH CSI300)
	OJ	00636	Cathay FTSE China A50 ETF
	OK	00639	Fubon SZSE 100 Index ETF
	OO	00643	Capital SZSE SME Price Index ETF

Applicable trading time

■ Domestic ETF Futures

Regular Trading Session	Opening Call Auction (8:30~8:45)	Not Applicable
	Continuous Matching (8:45~13:45)	Applicable

■ Offshore ETF Futures

Regular Trading Session	Opening Call Auction (8:30~8:45)	Not Applicable
	Continuous Matching (8:45~16:15)	Applicable

How dynamic price banding works

- TAIFEX checks each new order¹ (including limit orders, market orders and market with protection orders²) and simulates matched prices based on the order book at the time.
 - ◆ Buy Orders: simulated matched price $>$ the upper limit of dynamic price band \rightarrow reject order
 - ◆ Sell Orders: simulated matched price $<$ the lower limit of dynamic price band \rightarrow 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.*

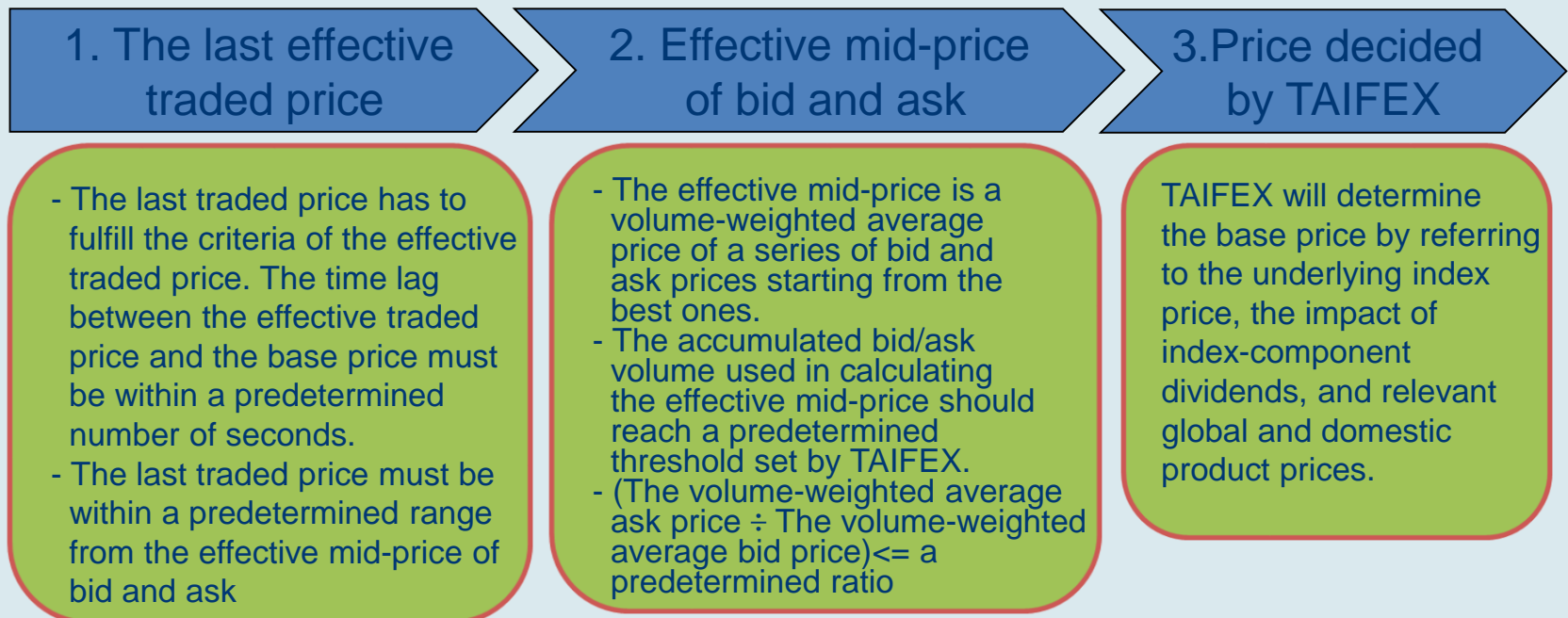
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Calculation of the limits of dynamic price band

- Upper limit : Base price + Variation range
- Lower limit : Base price - Variation range

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

■ Base price determination sequence



Calculation of the variation range

■ Variation Range

- ◆ Outright Month Contracts: the Referred Opening Price of the nearest month contract of the ETF futures \times outright rejection threshold (Domestic ETF Futures : 2% ; Offshore ETF Futures : 3.5%)
- ◆ Calendar Spread: the Referred Opening Price of the nearest month contract of the ETF futures \times spread rejection threshold (Domestic ETF Futures : 2% ; Offshore ETF Futures : 3.5%)

■ Example 1: Assuming the Referred Opening Price of the nearest month contract of NYF(Domestic ETF Futures) is 80 points:

- ◆ For the following regular trading session:
 - The variation range for outright contract is 1.6 points ($=80 \times 2\%$).
 - The variation range for calendar spread is 1.6 points ($=80 \times 2\%$).

■ Example 2: Assuming the Referred Opening Price of the nearest month contract of OAF(Offshore ETF Futures) is 30 points:

- ◆ For the following regular trading session:
 - The variation range for outright contract is 1.05 points ($=30 \times 3.5\%$).
 - The variation range for calendar spread is 1.05 points ($=30 \times 3.5\%$).

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 NYF 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.
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