

CORPORATE ADJUSTMENT METHODOLOGY FOR CASH SETTELED FUTURES CONTRACT

Pakistan Stock Exchange (PSX)



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1. INTRODUCTION

This paper covers the Pakistan Stock Exchange's (PSX) proposed methodology regarding adjustments in listed single stock futures contracts, settled in cash, due to corporate actions in the underlying stock.

Corporate actions are those events by the companies that may affect the stock price and/or outstanding shares of the company. There are different examples of such corporate actions, each having a specific underlying motive by the company.

Investors can also take important clues about financial health, life cycle stage, and short-term view of the company from their corporate actions. Corporate action is a major decision that typically needs to be approved by the company's board of directors and authorized by its shareholders.

Corporate actions can be mandatory (that apply to all shareholders) and voluntary (that provide choice to the existing shareholders). For example, a cash dividend is a mandatory event whereas the right issue is voluntary.

Following are some of the corporate adjustment events that are popular in the international markets:

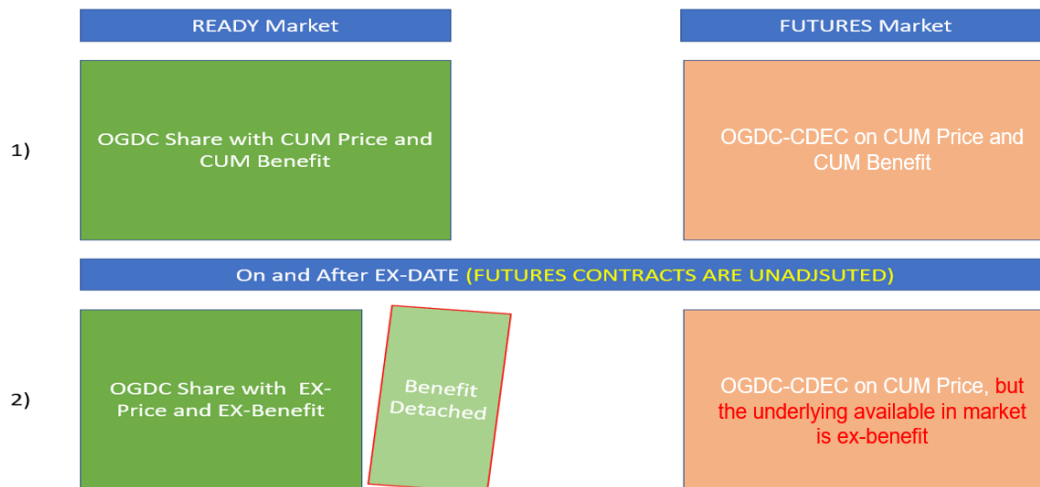
- Dividends
- Bonus issues / Stock Dividend
- Rights issues
- Stock splits and reverse stock splits
- Subdivision or consolidation of share capital
- Demergers
- Liquidation
- Mergers and takeovers

As they affect the share price and/or outstanding shares, therefore, it is important to understand the nature of adjustment required in the Cash/Ready and the Futures markets due to such events.

2. UNDERLYING NEED OF ADJUSTING THE FUTURES CONTRACTS

Whenever a stock, on which a Futures contract is open, undergoes corporate action, the characteristics of such stock on ex-date changes i.e., it is now traded with some kind of benefit detached from it. Whereas, the investors with the open futures positions on such stock had agreed on the terms with cum price/cum benefit basis. Hence, whenever a stock undergoes corporate action, its Futures contract also needs to be adjusted i.e., to either settle on cum basis or ex-basis, in parallel to the Cash (Ready) market. In addition to this, futures are derivative contract that derives their value from the underlying asset. These contracts are mostly used for hedging the existing exposure and investing in assets cheaply to track their performance. With adjustments in the underlying asset, hedging, and tracking exposure, both get impacted.

Underlying Need of Adjustment in Futures Contracts



A similar concept applies when shares in the ready market are adjusted on ex-basis due to dividends, rights shares, etc. The future rate agreed was for underlying which were trading in ready market on cum basis, but due to corporate action, the shares on original expiry would be on ex-benefit basis.

One such way to create fairness is the **Ratio Method**. In this method, the terms of the contracts are adjusted in parallel to the adjustment in the Cash (Ready) market. The Futures prices and contract size are adjusted such that the value of positions before and after the corporate actions are the same on gross basis. This method is very well known in almost all international exchanges.

3. ADJUSTMENTS IN RATIO METHOD

Any adjustment in CSF contracts for corporate actions would be carried out on the last day on which a security is traded on a cum-entitlement basis in the underlying equities (Ready) market, after the close of trading hours (i.e., CSF adjustments will be parallel to the adjustment in the Ready market).

Adjustments will entail modifications to contract specifications as listed below (such that the basic premise of adjustment i.e., value of futures positions before and after the adjustment remain the same, except due to tax implications, if applicable)

- a) Futures close price shall be adjusted to arrive at the Ex-Futures price
- b) Contract size/multiplier shall be adjusted to arrive at the (non-standard) adjusted contract size
- c) As the contracts are made non-standardized due to corporate action events, therefore, the contract codes shall also reflect the same; hence a suffix with an additional alphabet 'N' and a digit '1' should be added to represent the non-standard contract reflecting first adjustment made since the contract is listed. For second adjustment due to corporate action, the same practice shall be followed and the symbol will be amended to N2. In our example, ODGC-CDEC codes for one adjustment shall be amended to OGDC-CDECN1 and for subsequent adjustments as OGDC-CDECN2, OGDC-CDECN3, OGDC-CDECNn, etc.
- d) The adjustment shall be made on all contracts with or without open positions.
- e) Non-standard contracts will be adjusted again if the underlying goes for another corporate action before the original expiry. In this regard, the codes will reflect the same as described above.
- f) PSX will compute the adjustment factor in the manner described below for each specific corporate action event. The adjustment factor will be multiplied by the closing Futures price to determine the Ex-Future price whereas it will be divided by the prevailing contract size to determine the adjusted contract size.
- g) Ex-futures prices will be adjusted to two decimal places and contract size shall be truncated in such a way that the number is the whole number.
- h) Any difference due to rounding will be collected from and distributed onward by the NCCPL to respective account holders
- i) Taxation impact will be incorporated in case of Cash Dividend, bonus and any combinations thereupon. Rate of Filer shall be used for simplicity.
- j) Exchange shall have the right to not incorporate the taxation impact in one or any of the mentioned actions with prior intimation.

- k) In exceptional cases or corporate action scenarios, exchange has the right to exercise its discretion with the approval of the commission.

A. ADJUSTMENT METHODOLOGIES

Dividends:

If a company declares a cash dividend, then the contract multiplier and the price will be adjusted in such a way that the total exposure remains intact, as if a similar position was taken in the ready market, so that both the long and short parties are not disadvantaged on gross level, and one party does not gain at the expense of the other without the movement in the underlying security market price.

The following provides a detailed illustration for dividend adjustment:

In the READY market, prices of the stocks, undergoing cash distribution, are adjusted by deducting the cash dividend amount per share from the previous day's closing price on the ex-date.

$$\text{Stock Price}_{\text{EX}} = \text{Stock Price}_{\text{CUM}} - \text{Cash Dividend Per Share}$$

The Future CSF price shall be adjusted based on the ratio of Ex-price to Cum price.

Assume that a CSF contract was trading at Rs. 107.26 (while the underlying Ready market stock was trading at Rs. 107) and experiences a cash dividend of Rs. 10 per share. Its ex-price in the ready market becomes Rs. 97.

$$\text{Adjustment Factor} = (\text{Stock Price}_{\text{CUM}} - \text{Cash Dividend Per share}) \div \text{Stock Price}_{\text{CUM}}$$

Ratio for adjustment in CSF = $(107-10) / 107 = 0.90654205607$ (no rounding)

New Ex-Future Price (CSF) = Rs. 107.26 x 0.90654205607 = Rs. 97.235701

Non-Standard Contract Multiplier = 500 shares / 0.906524205607 = 551.5463918 shares

Dividend Tax rate (Filer) = 15%

$$\text{New contract multiplier after tax adjustment} = \text{Initial CSF shares} + \{(1 - \text{Tax rate}) \times (\text{Change in shares})\}$$

New contract multiplier after tax adjustment = $500 + \{(1-0.15) \times (551.5463918 - 500)\} = 543.814433$

However, it is not possible to have a fractional number of shares, so we truncate the number of shares.

New Non-standard contract multiplier = 543

In order to reduce the impact of truncation on the futures value, the ex-price of futures need to be adjusted upward using the following formulae:

Adjusted New-Ex Future Price (CSF) = New Ex-Future Price x Non-standard contract multiplier ÷ New Non-standard contract multiplier

Adjusted New-Ex Future Price (CSF) = Rs. 97.235701 x 543.814433 / 543 = Rs. 97.38 (rounded to 2 decimal places)

Value of Cum Position (CSF) = 500 x 107.26 = Rs. 53,630

Value of Ex-position (CSF) = (543 x 97.38) = Rs. 52,877.34

Value of notional tax = 97.235701 * (551.5463918 – 543.814433) = Rs. 751.82

Bonus Issue:

In the Ready market, closing prices of the stock is adjusted a day before the ex-date of stock undergoing bonus issue. It is adjusted by using the following formula:

Stock Price_{EX} = (Stock Price_{CUM} x 100) ÷ (Bonus shares + 100)

Similarly, if a company declares bonus shares, then again, the contract multiplier and the price need to be adjusted as depicted in the following illustration:

Assume that a CSF contract was trading at Rs. 107 (while the underlying Ready market stock was also at Rs. 107) and experiences a bonus issue of 10.15% shares. Its ex-price in the ready market becomes Rs. 97.14

Adjustment Factor = Stock Price_{EX} ÷ Stock Price_{CUM}

Ratio for adjustment in CSF = 97.14 / 107 = 0.9078504673 (no rounding)

New Ex-Future Price (CSF) = Rs. 107 x 0.9078504673 = Rs. 97.14

Non-standard Contract Multiplier = 500 shares / 0.9078504673 = 550.7514927 shares

Bonus Tax rate (Filer) = 10%

New contract multiplier after tax adjustment = Initial CSF shares + {(1 - Tax rate) x (Number of Bonus shares)}

New contract multiplier after tax adjustment = 500 + {(1-0.1) x (550.7514927 - 500)} = 545.6763434

However, it is not possible to have a fractional number of shares, so we truncate the number of shares.

New Non-standard contract multiplier = 545

In order to reduce the impact of truncation on the futures value, the ex-price of futures need to be adjusted upward using the following formulae:

Adjusted New-Ex Future Price (CSF) = New Ex-Future Price x Non-standard contract multiplier ÷ New Non-standard contract multiplier

Adjusted New-Ex Future Price (CSF) = Rs. 97.14x 545.6763434 / 545 = Rs. 97.26 (rounded to 2 decimal places)

Value of Cum Position (CSF) = Rs. 53,500.00

Value of Ex-position (CSF) = Rs. 53,006.70

Value of notional tax = 97.14 * (550.7514927 – 545.6763434) = Rs. 493

Right Issue:

In the Ready market, closing prices of the stock is adjusted a day before the ex-date of stock undergoing right issue. It is adjusted by using the following formula:

Stock Price_{EX} = {(Stock Price_{CUM} x 100) + (Right Issue x Right Issue Price)} ÷ (Right Issue + 100)

Likewise, if a company declares right issue, then the contract multiplier and the price will be adjusted as depicted in the following illustration:

Assume that a CSF contract was trading at Rs. 107.26 (while the underlying Ready market stock was at Rs. 107) and experiences a right issue of 20% additional shares for each share held at a premium of Rs.50. Its ex-price in the ready market becomes Rs. 99.17

Adjustment Factor = Stock Price_{EX} ÷ Stock Price_{CUM}

Ratio for adjustment in CSF = 99.17 / 107 = 0.92682243 (no rounding)

New Ex-Future Price (CSF) = Rs. 107.26 x 0.92682243= Rs. 99.41097383

Non-standard contract Multiplier = 500 shares / 0.92682243 = 539.4776646 shares

No tax on right issue of additional shares

However, it is not possible to have a fractional number of shares, so we truncate the number of shares.

New Non-standard contract multiplier = 539

In order to reduce the impact of truncation on the futures value, the ex-price of futures need to be adjusted upward using the following formulae:

Adjusted New-Ex Future Price (CSF) = New Ex-Future Price x Non-standard contract multiplier ÷ New Non-standard contract multiplier

Adjusted New-Ex Future Price (CSF) = Rs. 99.41097383x 539.4776646/539 = Rs. 99.50 (rounded to 2 decimal places).

Value of Cum Position (CSF) = 500 x 107.26 = Rs. 53,630

Value of Ex-position (CSF) = 539 x 99.50 = Rs. 53,630.50

Combination of Corporate Adjustments:

The underlying stocks ex-price is computed using the following formula, else remain same as practiced above:

$$\text{Stock Price}_{EX} = \frac{\{(\text{Stock Price}_{CUM} - \text{Cash Dividend}) \times 100\} + \{\text{Right Issue} \times (\text{Face value} + \text{Premium} - \text{Discount})\}}{100 + \text{Bonus Issue} + \text{Right Issue}}$$

The combinations can be of Bonus and Right issue, Bonus and Dividend, Dividend and Right or all three at the same time i.e. Bonus, Right and Dividend. However, it is important to note that the combinations can vary if the right is issue at discount, par or at a premium.

The steps followed will be similar to what is mentioned above for different corporate adjustments.

If a company simultaneously announce the dividend, bonus and right, then the adjustment in price of CSF and contract multiplier will be adjusted in such a way that the exposure remains consistent on gross level.

4. ADJUSTMENTS FOR POSITION LIMITS

Whenever PSX adjusts the Futures contracts based on Ratio method due to corporate actions in the underlying stocks, it will adjust the closing price, contract size, and contract symbol. There shall also be implications on the Reference Shares (Free Float Shares) used by PSX system for computation of position limits.

Following will be the before and after scenario of position limits.

| | Margin Rate | Contract Size | Futures Price | Position Value (Rs) | Margin Amount (Rs.) | Open Interest | | | Reference Shares for Position Limit [^] | Position Limit (%) |
|------------|-------------|---------------|---------------|---------------------|---------------------|---------------|----------|--------------|--|--------------------|
| | | | | | | Shares | Contract | Amount (Rs.) | | |
| Before | 15% | 500 | 107.00 | 53,500.00 | 8,025.00 | 500 | 1 | 53,500.00 | 699,731,036 | 0.000071% |
| After | 15% | 545 | 97.00 | 52,865.00 | 7,929.75 | 543 | 1 | 52,865.00 | 771,868,257 | 0.000071% |
| Difference | 0% | 45 | -10.00 | (635.00) | (95.25) | 43.00 | - | (635.00) | 72,137,221 | |

- Since the outstanding shares and free float shares are adjusted due to bonus and right issue by the Central Depository Company (CDC), but this update happens after a certain period of time.
- The shares used as a reference point for position limit determination shall be adjusted by the adjustment factor determined by the exchange at each adjustment case including dividend.
- Marked to market and Exposure Margin practice shall follow NCCPL rules.

- Open interest, in international futures market, is represented in terms of contracts and amount, rather in terms of underlying shares. As seen, the open interest in terms of contracts remain same before and after the corporate adjustment, however the difference in amount is due to tax implications and rounding-off.

Note: For any risk management implications, please check the NCCPL rules and regulations.

5. CORPORATE ACTIONS NOTICE

The Exchange will inform participants of any Corporate Actions via the publication of a corporate action announcement notice. It will be published in respect of a corporate action when information is made public by the company and gives sufficient certainty of that company's intention to perform a corporate action. It will detail the adjustment methodology along with the adjustment factor the exchange intends to apply. Where necessary, at the close of business on the last day that a company's shares are trading cum-entitlement, the Exchange will publish another corporate action Notice confirming adjustments made to futures contracts.

6. GENERAL GUIDELINES

PSX foresees that, in many situations Futures contracts will be adjusted under this policy document. However, due to changing dynamics and complex acquisition transactions, it should be noted that in certain circumstances, this may not be possible or appropriate. In such cases, PSX solely retains the right to determine how the existing contracts should best be adjusted (if at all) with the approval of the Commission.

For corporate actions such as merger, acquisitions, consolidation, spin-off, delisting etc. which are very rare, the exchange may consider forced settlement procedure i.e., pre-dating the maturity of the contract.

As a practice, PSX will issue one or more corporate action notices in respect of each corporate action where adjustment to a futures contract is required or expected under the terms of this policy document.

This policy document details the policy of PSX concerning adjustment in futures contracts due to corporate actions. It is issued pursuant to, and should be read in conjunction with, the PSX rule book.