Managing key commodity costs in large scale construction projects

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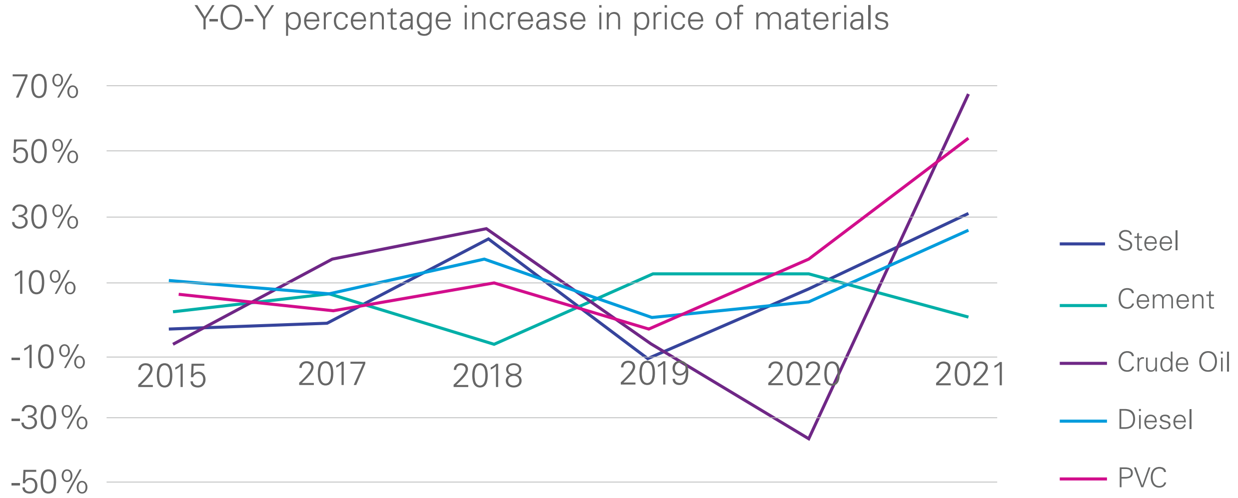
Large construction projects are inherently complex and at times, subject to poor contracting and cost management practices, leading to risk of cost overruns, claims and even disputes.

Recovering from the recent pandemic, project owners and contractors have undertaken a large quantum of construction projects as part of strategic growth initiatives.



Graphic No.1: Y-O-Y percentage increase in material price[1]

Key commodities, namely, steel, cement and others have seen major hikes, causing uncertainty in how the increased rates are to be managed within the ongoing fixed price contracts, and even the contracts allowing for variable rates. Based on KPMG's experience of advising various projects across sectors, typical impacts observed include:

- For new contracts: Transfer of the cost risk by owners to the contractor leading to high-risk contingencies in contractor rates. This leads to unviable bids imperiling project business cases.
- Alternatively, in some contracts, the entire price escalation risk is passed to the project owner by simply allowing payment towards all commodities at actual market prices to the contractor, rendering uncertain project costs.
- For ongoing contracts: Poorly designed price variation clauses in the contract lead to claims, disputes and even stalled projects.

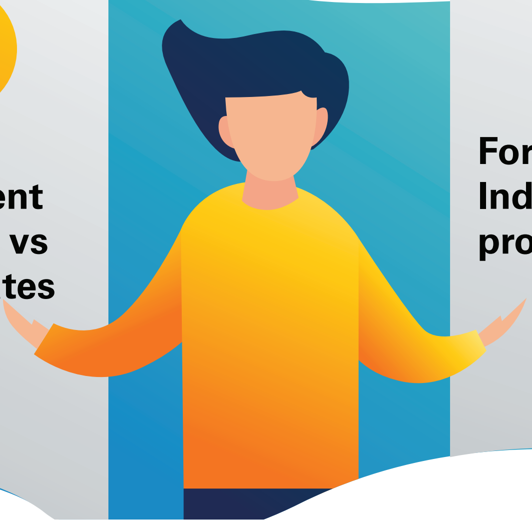
In order to share the risk of fluctuating prices, and to make the contract more equitable, inclusion of price adjustment mechanism in the contract is a necessity.

1. Source of Prices: Indian Construction Costs Biannual Review Report, Gleeds, January 2022/ Accessed on 09 April 2022

Approaches to price adjustment in construction Contracts

Approach 1.

Critical Component Base rate vs Actual Rates provision



Approach 2.

Formula and Indices based provision

Approach 1: Critical Component Base rate vs Actual Rates provision

Prices based on actual quantity and rate

Price adjustment is allowed for

1. Certain critical commodities
2. Base rate is fixed as on bid due date or 28 days before due date
3. Actual procurement rate and usage are tracked and paid.

Disadvantages:

Price adjustment is allowed for

1. No incentive for contractors to negotiate better rates or apply optimized procurement methods
2. High involvement from owners to track actual rate movement and usage by contractors at the site.

"Price adjustment clause shall apply for steel, cement, bitumen and POL for all the works based on the difference between the "Base Rate" and the actual landed costs of the respective materials at site. Price adjustment will apply only when the difference between the estimated rates of steel, cement, POL, bitumen and all other material and their current price is more or less than 5%. Thus, if the price increase is 10%, payment will be made only to the extent of 5% (10%-5%) and vice versa in case of decrease in rates."

Graphic No.2: Typical Price adjustment clause for civil/ construction contract

Approach 2:
Formula and indices-based provision

Price Adjustment is based on formula and index, which are customized on case-to-case basis:

1. Nature of contract and type of works
2. Contribution of various components in the contract price
3. Different indices can be used for different components.

For Civil Engineering Works including all necessary Supplies

Unless otherwise specified, the Price for the Civil Engineering works including all necessary supplies shall be subject to adjustment in accordance with the following formulae:

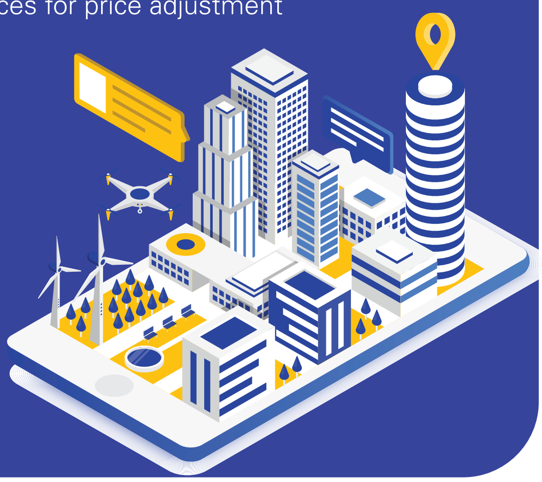
For General Civil Works:

$P = Po\ [\ 0.15 + 0.3\ (LTR/LTO) + 0.25\ (Ci/Co) + 0.1\ (Si/So) + 0.05\ (OMi/OMo) + 0.05\ (Fi/Fo) + 0.1\ CMi/CMo)]$

This formula and indices-based approach for price adjustment is widely accepted across the industry, including PSUs and FIDIC standards. It is also combined with an overall ceiling provision in the clause to cap the overall liability.

The key parameters forming a price adjustment formula are

- Coverage/weightage
- Base date
- Indices for price adjustment



Base date

- Usually considered as ~7 to 28 days before bid submission date.
- Allows flexibility to submit bids with latest rates

Concerns in current situation:

- Longer bid validity period and delay in award increases risk.
- Abrupt price changes before bid submission date may lead to higher risk contingency.

How the price adjustment provision helps?

- Base date before submission addresses risk of price change during validity period
- WPI trends based mechanism helps adjust prices even if the initial prices are higher during bid or prices rise during execution
- Scenario analysis using WPI and other indices' trend provide inputs for timing procurement.

Coverage/weightage

- Fixed component (no adjustment) - typically 15% of contract price
- Weightages of other components like key material, labour, machinery decided based on its share in the total contract price. e.g. earthwork contracts may include only labour and machinery only while civil works may include weightage for labour, cement, steel, machinery and other materials.

How is it defined:

- Pre-defining the weightages in the tender for specific scope of work based on preliminary engineering
- Weightages to be quoted by the bidder in their technical bid within a range specified by the employer
- Negotiated and agreed by the parties during contract finalisation usually followed by private parties

5. Cloud smart: Enabling business, collaboration, agility and resilience, KPMG, 2020

Approach 2:
Formula and indices-based provision
continued...

Indices for price adjustment

- Different indices for different components
- Labour rate adjustment - by using minimum wages published by state or Central government or using CPI by Labour bureau
    - Minimum wages published by state or Central government for different categories of workers.
    - CPI - computed for specific parts and then aggregated for the entire country
- WPI published by RBI or Office of Economic Advisor for all commodities collectively and individually
- WPI - calculated for the entire country
    - Based on data collected on material prices captured through numerous quotations
    - Current base year for WPI data: 2011-12, (Base year revision is underway)
    - In WPI series, number of quotations considered for some commonly referred commodities for construction projects are:

Manufacture of cement, lime, and plaster – 130

Manufacture of articles of concrete, cement, and plaster – 96

Mild Steel - Flat products – 75

Mild Steel - Long Products – 63

Bitumen – 60

Mild Steel - Semi Finished Steel – 40

Adequate number of quotation indicates that WPI is based on real changes of prices although the time for data processing & release makes it a lag indicator of the trend. However, for items where no. of quotations are less, it may be prudent to adopt alternative indices.

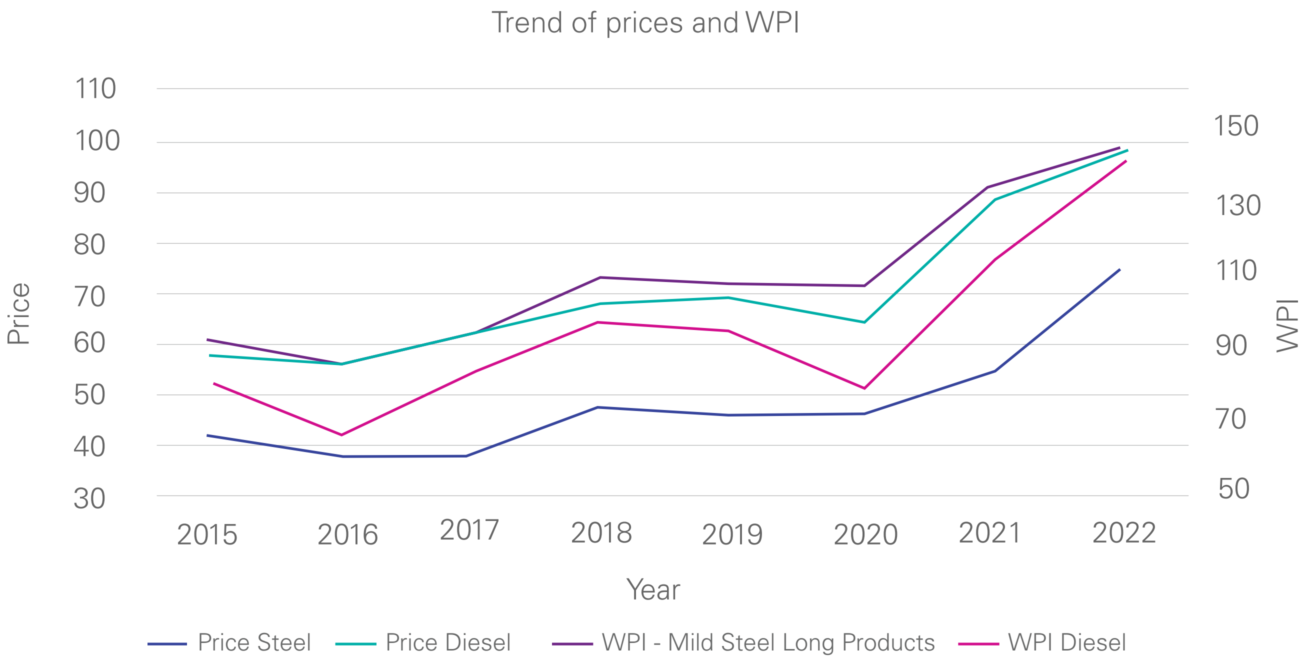
In addition to WPI and CPI, following indices may also be referred:

- LME for copper (London Metal Exchange)
- IEEMA for electrical items (Indian Electrical and Electronics Manufacturers’ Association)
- Mysteel and MEPS for steel (Management Engineering & Production Services)

Source for number of quotations[2].

2. Source: Website of the Office of Economic Adviser, Wholesale Price Index (WPI) Manual, Accessed on 09 April 2022

Following trend chart is depicting the annual change in prices of steel and diesel with corresponding indices.



Graphic No. 4: Change in price[3] vs index[4] – Steel and diesel

Price of Steel in INR/Kg, Price of Diesel in INR/Ltr

Summary:

- **Use price adjustment mechanism with formula & indices**
- **Customise formula for weightage & indices**
- **Balance risk sharing between the parties**
- **Amend existing contracts with PA mechanism**
- **Ceiling provision may be applied overall but not on individual components**
- **Indices to be selected as a best fit for the component**

3. Source of Price: Report on Predicting Construction Cost in Volatile Market, Gleeds, Q1 2022, Accessed on 16 April 2022
4. Source of WPI: Website of the Office of Economic Adviser, Wholesale Price Index (WPI) Data (2011-12=100), Accessed on 09 April 2022

Acknowledgement

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