## Inflation in the construction industry: Toward a new contractual approach



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# Price volatility: A challenge that is disrupting major construction projects

Uncertainty over market conditions

Since 2020, the construction industry has had to deal with considerable volatility in the prices of components needed to complete projects. This is largely due to shortages of raw materials, geopolitical tensions and global supply chain disruptions.

While this situation may appear tied to specific circumstances, some economic analysts are saying that it may be difficult to get back to inflation at 2%, which is the Bank of Canada's target, over the next few years.

Added to this will be factors that are likely to place additional pressure on prices, such as labour shortages, the current negotiations in Quebec and Ontario on the 2025 collective agreement, and the large order backlogs among contractors and subcontractors for major infrastructure projects scheduled for the next few years.

#### What is the impact on clients and contractors?

In the case of lump-sum contracts, this situation raises risk levels for contractors, who are required to submit a firm price upon submitting their proposal. This gives contractors an incentive to set aside more for contingencies and add significant risk premiums to their proposals, or simply not to bid on the projects they consider too risky.

> The challenges inherent in price volatility mean that clients and society as a whole are confronted with more costly public projects.



Less competition in the process for awarding lump-sum contracts



Volatile prices for the components needed to complete projects

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By including a price adjustment mechanism in call-for-proposal documents and adding a clause to lump-sum contracts, both clients and bidders will be able to benefit from an approach that is fair, transparent and equitable.

A number of public organizations are discussing such mechanisms, and some have begun work on them, but few have developed mechanisms covering all components of construction projects. Given this situation, Pomerleau Inc. (Pomerleau) and PricewaterhouseCoopers LLP/s.r.l./s.e.n.c.r.l. (PwC) have joined forces to propose a frame of reference for implementing a price adjustment mechanism that can address certain shortcomings in the approaches currently under consideration. This proposal includes the following:



## Price adjustment mechanisms: Basic concepts

In general, price adjustment mechanisms include guidelines on which cost components are subject to adjustment, the price indexes used, and the inclusion and definition of a buffer zone thresholds.



### Make a distinction between building construction projects and civil and infrastructure projects

There are many kinds of construction projects, and there is no single solution that will cover all projects, not least because of the kind of indexes that are available and their applicability to different types of projects. For example, for non-residential building projects, Statistics Canada has developed the Building Construction Price Index (BCPI). In the case of civil construction and infrastructure projects, there is no single index that covers all project components. A variety of Construction Union Wage Rate Indexes and Industrial Product and Price Indexes (IPPIs) must be used, depending on the construction materials required for the project. Although the basic principles apply to both building construction projects and civil and infrastructure projects, the available indexes have led us to develop two distinct mechanisms: one for each type of project.

#### **IPPIs**

Canada's inflation target and its negative value (i.e., from -2% to 2%).

In Canada, IPPIs are the only publicly available price indexes that track price changes over time in certain cost components. These indexes present a major limitation to a price adjustment mechanism, since they provide measures of average changes in prices received by producers (or suppliers) of raw materials or lightly processed raw materials. In principle, IPPIs exclude certain processing costs (where applicable), transportation costs, the sales margins of the various players in a product's value chain and consumption taxes. As a result, these indexes do not fully reflect the final prices to contractors of materials and equipment.

# Mechanism for building construction: Making the most of the available indexes

The BCPI, published by Statistics Canada, provides a measure of market price changes over time for each division of the MasterFormat standard, as well as for all the divisions in aggregate.

This index, which has been available since the early 1980s, tracks the prices charged by contractors in their building construction projects. It covers most of the components normally included in the prices that clients pay to contractors. Consequently, the index is relevant to measuring changes in price over time for use in an adjustment mechanism, since it takes actual market conditions into account and includes the following:

- 1. Cost of materials
- 2. Equipment management
- 3. Labour costs
- 4. Profit and overhead of subcontractors and general contractors
- 5. Local market conditions



#### MASTERFORMAT

Although the BCPI has been published by Statistics Canada since the 1980s, indexes at the MasterFormat level have been available for the last few years on request. Since 2023 they have been publicly available.

MasterFormat is used throughout the construction industry to format specifications for construction contract documents. The normative directory is produced jointly by the Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC).



#### Simple application method

- 1. A reference date is set: the date from which the mechanism will apply.
- 2. The client determines a buffer zone thresholds, representing an interval of price changes that is considered normal and acceptable, and against which the mechanism offers no protection.
- 3. Each bidder submits a proposal that includes a breakdown of costs that is limited to adjustable components according to level 2 of the MasterFormat (i.e., by construction division or specialty), as well as the planned dates on which contracts will be awarded to subcontractors and suppliers.
- 4. Prices are adjusted, either as at the agreed dates (as set out in the proposal) or as at any other date agreed with the client.



1. A +/- 2% buffer zone thresholds has been chosen for illustrative purposes only.

#### A mechanism that benefits clients and contractors alike

- 1. **Fair:** The mechanism places limits on the price changes that must be absorbed by contractors, and it better shares the risk of cost inflation between clients and contractors. As a result, the mechanism enhances the competitiveness of the contract award process by giving bidders added incentive to submit a proposal.
- 2. Efficient: The mechanism offers an intuitive approach, with simple verification measures that can be carried out by the client's teams (the existing teams, not personnel specialized in economic analysis). The inclusion of a buffer zone thresholds means that the bidders and the client only need to bear costs falling outside the standard range, and it lightens the administrative burden on both sides. The mechanism is easily incorporated into the contract, providing both parties with a clear frame of reference.
- **3. Transparent and easily verifiable:** The mechanism is based on the BCPI as published by Statistics Canada, which is recognized for its reliability and transparency and is accessible to all, free of charge. The index includes a relevant level of granularity (divisions, building types and regions), such that the specific features of each project can be taken into account. The parameters of the price adjustment mechanism (e.g., MasterFormat Level 2 construction costs, expected dates for signing contracts with subcontractors, etc.) are set when proposals are submitted and are included in the contract, with bidders competing for the contract.

### Mechanism for civil and infrastructure projects: In the absence of a single, definitive index, a "basket" approach becomes necessary

Civil construction projects and major infrastructure projects, by their very nature, have different specificities and risks compare to building construction projects. Also there is not an index comparable to the BCPI that can be applied. Consequently, the mechanism applicable to this type of project must be based on a series of price indexes that track changes in material, equipment and labour prices, in particular through the use of IPPIs.

#### Ensuring representativeness, while offering a simple solution

PwC and Pomerleau have developed an approach based on the concept of a "basket of indexes" and project "Elements." The approach is to be applied under the following guidelines:

#### 1. Identify adjustable and non-adjustable components

The proposed adjustment mechanism distinguishes between adjustable and non-adjustable components of costs in order to determine to which project costs the mechanism applies.

#### Adjustable cost components

- Represent a substantial share of the total design-build cost
- Are directly affected by inflation
- Cannot be priced at the time that the contractors' proposals are submitted

#### Non-adjustable cost components

- Represent only a small portion of total design-build costs
- Have little or no direct link to inflation (e.g., design costs, cost of permits and approvals, etc.)
- Can be priced when the bids are submitted

It is up to the client to make the distinction between adjustable and non-adjustable costs, and communicate it to bidders in the call-for-proposals document. In general, labour directly assigned to the project, materials, machinery and equipment, as well as certain transportation and consumable costs, are considered to be adjustable cost components. Non-adjustable cost components include design costs, the company's project costs, proposal development costs, financing costs and performance guarantees, permits and authorizations, profits and contingencies, etc.

Once this distinction has been made, the client can define an adjustable cost thresholds by imposing a limit on the share of total costs that will be subject to the adjustment mechanism.

#### 2. Identify the project's "Elements" and the monthly disbursement curves

- The client identifies various project "**Elements**," each of which corresponds to a different homogeneous section or stage of the project and is independent of the others. By dividing the project into a series of project Elements, the client is able to associate a representative basket of indexes with each one.
- For each Element, the contractor presents a **monthly disbursement curve** in the financial model included in its proposal. Such curves correspond to changes in the monthly expenses incurred for the various adjustable cost components of each specific Element. This means that bidders are free to choose which components are needed to complete an Element.

#### 3. Identify a basket of indexes for each project Element

- The bidder associates one or a basket of representative price indexes with each of the cost components identified in the client's reference model (the "shadow bid"). Available indexes include:
  - indexes associated with labour components, such as "Union wages in the construction sector, according to rates that include certain additional types of compensation"
  - o Indexes associated with materials components, such as IPPIs and Raw Materials Price Indexes
- In order to address the issue of the non-representativeness of IPPIs, the proposed mechanism allows contractors
  to break down their purchases of materials into various cost components so that they can be indexed
  appropriately. For example, if a contractor plans to purchase \$1 million worth of steel for a given Element, the
  proposal could indicate that of this amount, 70% is considered raw materials that must be indexed using the
  appropriate IPPI, 20% is attributable to transportation and must be indexed using the freight services index, and
  10% is attributable to further processing and must be indexed using an appropriate industrial processing index.

#### 4. Buffer zone thresholds

• The client clearly indicates the buffer zone thresholds in the call for proposals. This can be determined according to several criteria, as mentioned on page 5.

#### 5. Mechanism application dates

• The adjustment mechanism is structured around three key dates: the reference date on which the price adjustment mechanism comes into effect (e.g., 10 business days before the deadline for submitting financial proposals), the dates for calculating the adjustment (e.g., monthly) and the payment dates (e.g., quarterly). In the interests of transparency, these dates are specified in advance, either in the call for proposals (including in the draft contract) or in the contractor's proposal, as the case may be. The adjustment applies to the monthly disbursement curves submitted by the contractor, rather than to actual expenses.

#### Visualization of Steps 1 to 4 presented on the previous page

The following figure illustrates a basic example of the mechanism as it would be applied to a bridge construction project. First, a determination is made of adjustable and non-adjustable components. Next, disbursement curves are identified for the three project "Elements" (superstructure, substructure and foundation). For each project Element, a basket of indexes is identified, weighted according to the relative weight of each component. Lastly, the net adjustment of the buffer zone thresholds is calculated.





#### Benefits of the proposed mechanism for civil and infrastructure projects

Much like the Building mechanism, this mechanism is:

 Fair
 It allows for a fair sharing of inflation risk between clients and contractors and encourages competition in the awarding process by incentivizing bidders to submit a proposal;

 Image: Second state
 Efficient
 By including a buffer zone thresholds, bidders and the client will only need to bear the cost of exceptional changes in prices, and the administrative burden will be lighter for both parties. The mechanism is easily incorporated into the contract, providing both parties with a clear frame of reference.

 Image: Second state
 Transparent and realistic
 The mechanism is based on indexes published by Statistics Canada, which are accessible to all, free of charge. What is more, given the diverse nature of civil and infrastructure projects and the lack of a single index for this purpose, the approach based on a basket of indexes and defined project elements is both structured and flexible. It takes into account the specific nature of the project as well as all the factors generating volatility in materials, equipment and

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labour prices.

#### Conclusion

Given the changes in the economic environment and the uncertainties raised by inflationary pressures, many public bodies in Canada and around the world see the impact that this economic climate is having on construction industry stakeholders and society as a whole. One of the solutions being proposed is the introduction of price adjustment clauses in lump-sum contracts, as this promotes competitive bidding and balanced risk-sharing between contractors and clients.

However, these mechanisms need to be thought in advance, in order to provide a solution that will adequately address price volatility issues and meet the objectives of both clients and contractors. Incidentally, the details of the formula, the buffer zone thresholds and other considerations for index selection need to be adapted to the specific nature of each project.

Nevertheless, the key principles proposed by Pomerleau and PwC are as follows:



A mechanism for building construction must be built around Statistics Canada's non-residential building indexes, i.e., the BCPI.

The mechanism for civil and infrastructure projects must be based on breaking down the project according to its major Elements, for which a "basket" of indexes is associated, combining IPPIs and representative wage rates.

#### **Contributors** For more information, do not hesitate to contact one of the following organizations.



Michael Dobner PwC | Partner, National Leader of Economics Practice & Policy michael.dobner@pwc.com



Jacynthe Audette PwC | Managing Director, Capital project & Infrastructure jacynthe.audette@pwc.com



Joel Rochon Boudreault Pomerleau | Senior Director Projet support joel.rb@pomerleau.ca

#### Sean Boyer





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