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Witness: Julia Frayer
Request from: Public Utilities Regulatory Authority

Question:

(OM&A PFP and X-FACTOR) Exhibit CLP-PBR-2, p. 22. The text states that "there are several well-known number indexation techniques and resulting index formulations: Laspeyres index, Paasche index, Fisher Ideal index, and Törnqvist index, as shown in Figure 7." However, the figure does not provide the Törnqvist index equation. Provide the Törnqvist index formula, and any other missing terms, that corresponds to the indexation techniques discussed in Figure 7.

Response:

Please refer to the information below in response to this request;

$$\text{Törnqvist index} = \prod_{i=1}^{n} \left(\frac{P_{i,t}}{P_{i,t-1}} \right)^{\frac{s_{i,t}+s_{i,t-1}}{2}} \times 100$$

Where:

$P = \text{price}$

$t = \text{time}$

$i = \text{input category (capital or OM\&A)}$

$n = \text{total number of input categories}$

$s_{i,t} = \text{expenditure share of input i in period t calculated as } \frac{P_{i,t}Q_{i,t}}{\sum_{j=1}^{n} P_{j,t}Q_{j,t}}$

$Q = \text{quantity}$

$j = \textit{summation index representing each input category (capital and OM\&A)}$