

Client's Expectations vs Contractor's Pricing. Fair Prices or Bid Rigging

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1 Introduction

Exceptionally high values of the construction contracts are met in the road construction industry in Poland. The main goal of this work is to answer, how to distinguish market price from an unrealistic, overpriced bid. Overpricing can be caused by the collusive behaviours of all participants of a certain tender procedure. When the project is ordered in the “design and build” formula, the comparison of unit prices is impossible – at the moment of ordering the precise volume of works of each kind is unknown. As public procurement law in Poland requires from a client preparing an estimation of the order value, before the announcement of a tender procedure, it is proposed to base the model of distinguishing a market price from the non-concurrent price on *PtE* ratio defined (Anysz, 2019) as:

$$PtE = \frac{\text{bid price chosen by a client as the best one}}{\text{client's estimation} * 1,23} \quad (1)$$

The multiplier in the denominator it is a Polish VAT rate adjustment – to make both values gross *i.e.* VAT included. There are several reasons making the winner's bid price different from a client estimation *e.g.* unique cost level of a contractor, market state, contractor's financial standing, but mistakes in contractors bid price calculations and collusive practices too. It was proved that contractors' pricing is market dependent. The Pearson's correlation (Aczel, 1992) between “expected prices” indicator (officially published monthly) and average *PtE* (calculated for each month separately) is found as 0,659. So, the border between market price and an overpriced bid is also a state of the market dependent over the time.

2 Proposed Model

It is proposed to consider the influence of the state of the market by referring bid price level (represented by *PtE* value for a certain procedure) to simple moving average (*SMA*) (Gençay and Stengos, 1998) of *PtE* values based on tender procedures completed within 30 days before completing date of a certain tender procedure. Similarly to analysis of stock exchange prices with Bollinger bands (Lento *et al.*, 2007), *SMA* is widened to a band limited by symmetrical upper and lower limits. To evaluate the limits, it was assumed that potential mistakes made in contractors' price estimations can make the bid price lower or higher at the same level. Defining the band limits as:

$$L_U = SMA + k \quad (2)$$

$$L_L = SMA - k \quad (3)$$

constant $k > 0$ is found, equal to 0,39 which makes every $PtE > L_L$ (see Figure 1).

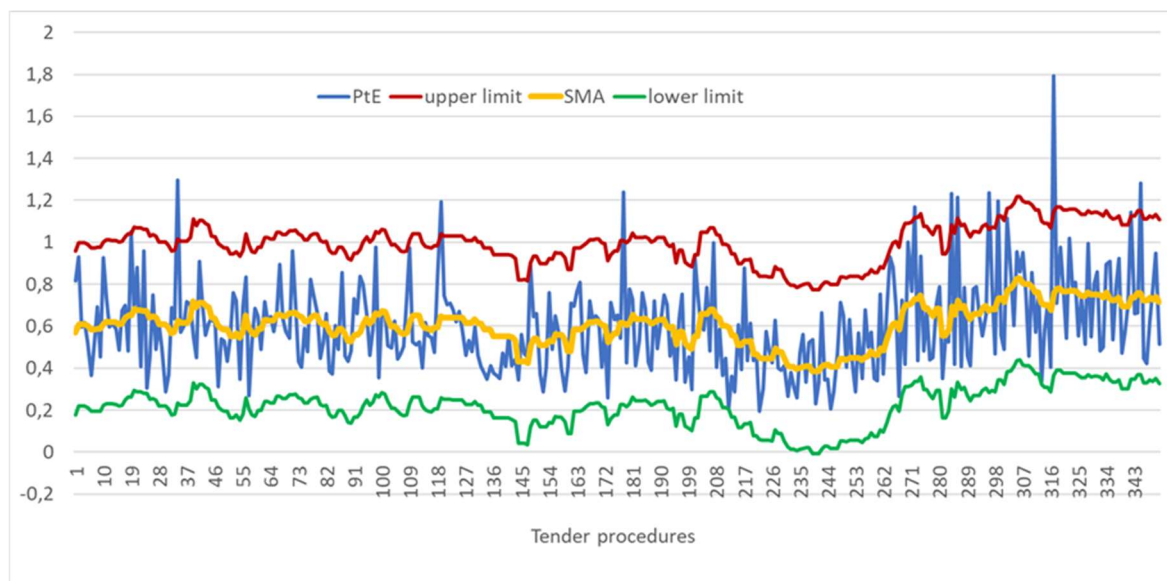


Figure 1. SMA, symmetric SMA band for $k = 0,39$ with PtE on the band (for 343 tender procedures).

3 Conclusions

The model built for the real database of 382 Polish tender procedures in the road construction industry (from July 2014 to June 2017), aimed at collusion finding, couldn't be verified directly (there is any court sentence punishing collusion for examined tender procedures). The indirect verification – through other indicators that usually accompanying collusion, shows that PtE exceeding L_U (based on SMA) can't be the single collusion indicator. The very high bid price level – defined in the model – can be a separate indicator of unusually high bid prices. One of the possible reasons of their appearing is collusion or bid rigging. It is proposed to observe this indicator along with number of offerors and bid price range in each tender procedure.

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