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Forecasting construction tender price index in Hong Kong using vector error correction model

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Abstract

Reliable short- to medium-term prediction of the tender price index (TPI) is crucial to construction stakeholders, and this has stimulated the interest of the research community to seek a more analytical method for TPI forecast. The purpose of this study is to establish an econometric model for accurately predicting the tender price movements based on a group of associated financial and macroeconomic variables. Applying Johansen's method for multivariate cointegration analysis, the tender price was found to be cointegrated with the gross domestic product, construction output and building cost. A vector error correction (VEC) model imposing the cointegration restriction was then developed for the purpose of forecasting. The model was verified against various diagnostic statistical criteria and compared with the Box-Jenkins and regression models. With a mean absolute percentage error for a three-year ahead

forecast at 2.9% level, the developed VEC model outperforms the Box-Jenkins and regression models, and is proven to be efficient and reliable in forecasting the short- to medium-term tender price movements. The model can assist estimators to predict the TPI pattern in advance, and it can also help the public sector in planning for the construction workload to improve the stability of the construction market. Although the VEC model developed focuses on the Hong Kong construction market, the econometric technique can be applied to modelling other economic variables.

Keywords:

Cost estimate | econometric modelling | tender price index | vector error correction model | forecast