

Deflationary Dynamics in Hong Kong: Evidence from Linear and Neural Network Regime Switching Models

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Summary

This paper examines deflationary dynamics in Hong Kong with a linear and a nonlinear neural-network regime-switching (NNRS) model.

The neural network approach is an approximation for nonlinear processes which may come into play when the inflation process reaches near zero or negative levels. The hypothesis is that under high positive inflation, the inflation process will be relatively more “linear” due to the onset of an indexation mechanism, whereas under very low or negative inflation rates, the process will show nonlinear patterns and threshold effects, perhaps due to the zero lower bound on nominal interest rates.

We find that NNRS model is superior to the linear model in terms of in-sample diagnostic and specification tests, as well as out-of-sample forecasting accuracy, measured by Diebold-Mariano statistics.

Since the model is nonlinear, we use bootstrapping methods to assess the significance of the values of the partial derivatives of key variables on the underlying inflation process. As befitting a small and highly open economy, the most important variables affecting inflation and deflation turn out to be the growth rates of import prices and wealth (captured by the rates of growth of residential property prices and the Hang Seng index). The NNRS also model indicates that the likelihood of moving out of deflation has been steadily increasing.