

## **Bayesian modelling structural changes on Housing Price Dynamics**

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**Abstract.** This paper examines the impact of the inflation rate and interest rates on housing price dynamics in the U.S. and U.K. housing markets covering the period of 1991 to 2018. We detect structural changes base on autoregressive models having exogenous inputs (ARX) with GARCH-type errors via Bayesian methods. This study conducts a Bayesian model comparison among three scenario structural-change model by designing an adaptive an adaptive Markov chain Monte Carlo sampling scheme. The results from the deviance information criterion show that ARX-GARCH models with two structural changes are preferable over those with no/one structural change in both countries. The estimated locations of breakpoint in the housing returns are dissimilar when we use different exogenous variables, thus asserting the importance and necessity of considering structural changes in housing markets. Bayesian estimation results further reveal the different impacts of interest rates and the inflation rate on the housing returns in each market. More specifically, the inflation rate has a negative impact on the U.S. housing market in economic downturn (including the global financial crisis), but no strong relationship for the other periods and other exogenous variables. Conversely, we note that interest rates have a reverse influence on the U.K. housing market in a recession only and are insignificant in other periods and other exogenous inputs. The results are consistent in one aspect, whereby the house prices are more sensitive during the recession era.