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# Predicting Wealth-Based Inequality Through Real Estate Price Dispersion: A Robust Ex Ante Framework Under Shock Scenarios

Alicja Wolny-Dominiak , Tomasz ??d?o , Monika Hada?-Dyduch , Tomasz Stachurski Adam Chwila , Ma?gorzata K. Krzciuk

*University of Economics in Katowice, Poland*

## Abstract

Traditional income inequality measures, such as the Gini coefficient, are subject to data lags and do not adequately reflect wealth accumulation dynamics. Moreover, real estate research typically focuses on price levels rather than price dispersion and rarely evaluates ex ante predictive accuracy under unexpected shocks. This study proposes a novel framework for predicting wealth-based inequality using data from the U.S. prefabricated housing market. We introduce the Regional Inequality and Volatility (RIV) vector, combining the Quartile Dispersion Ratio (QDR) and Average Absolute Deviation (AAD) to capture both relative inequality and absolute volatility. Log-linear mixed models and a parametric bootstrap procedure are employed to assess ex ante forecast accuracy, while robustness is tested under eight simulated stochastic shock scenarios. The results reveal growing absolute dispersion despite stable relative inequality, indicating a shift toward wealth exclusion. The proposed framework demonstrates strong robustness, offering a forward-looking and shock-resistant approach to measuring wealth-based inequality.

**Keywords:** Inequality; Real Estate Price; Dispersion; Prediction; Linear Model