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DETERMINANTS OF HOUSEHOLD WEALTH: A MACHINE LEARNING APPROACH

Abstract:

Using household-level data from the Panel Study of Income Dynamics, we show that machine learning techniques can predict household wealth with a median absolute percentage error (MdAPE) of 15.74%. This study utilises decision trees, decision forests, and artificial neural networks, common statistical pattern recognition tools used in machine learning to predict U.S. household net wealth and net wealth minus housing equity. The findings reported across the 1999-2017 period, suggest variables such as profit on stock, house value, and profit on business are the best features in predicting household wealth. Secondly, the results identify alternative variables such as dividends, years left on mortgage, and interest income are also important factors in determining a households wealth. Thirdly, we forecast cross-sectional household wealth and find machine learning algorithms have substantially higher predictive power compared to a weighted least squares regression model, and can forecast future wealth with a 61% MdAPE. We believe this novel application of machine learning algorithms provides new insights into their effectiveness and applicability to household-level data.

Keywords:

Household wealth, Wealth determinants, Household Characteristics, Machine learning, Decision trees, Decision Forests, Artificial Neural Network, United States, PSID.

JEL Classification: D14, D31