



THE UNIVERSITY OF
CHICAGO

DEPARTMENT OF STATISTICS

Master's Thesis Presentation

Yiyuan (Chloe) Zhang

Department of Statistics
The University of Chicago

“High-Dimensional Time Series: VAR Model Efficacy Across Lag Structures”

April 29, 2024, at 11:00 AM
Jones 111, 5747 S. Ellis Avenue

Abstract

The nuanced analysis of high-dimensional time series data holds paramount importance across various fields, including economics, finance, and engineering, demands sophisticated modeling techniques that can accurately capture dynamic interdependencies and forecast future observations. This paper centers on the critical role of high-dimensionality within the realm of Vector Autoregression (VAR) models, emphasizing the pivotal influence of lag order in sculpting the analytical structure of time series data. Acknowledging the complexity and variety of temporal relationships in high-dimensional datasets, this study innovates by analyzing the performance of various established methodologies, specifically, factor adjusted models (DFM and FAVAR), Lasso regression, and Information Criteria, across different lag order structures. Our study embarks on a detailed examination of these methodologies' ability to navigate the challenges posed by high-dimensional time series data, particularly emphasizing the differential impact of various lag order configurations on model performance. By systematically comparing these models across structures, we aim to unveil nuanced insights into each approach's forecasting accuracy and adaptability in capturing intricate data dependencies.