

Bachelor’s Thesis Title: Development of a Synthetic Composite Leading indicator for the U.S economy

INDEX

ABSTRACT
INTRODUCTION
2.1 The Importance of Leading Indicators
2.2 Economic Landscape of the United States
VARIABLE SELECTION AND ANALYSIS.....
3.1 Identification of Key Leading Economic Variables
3.2 Statistical Analysis for Variable Suitability
THEORETICAL FRAMEWORK FOR INDICATOR CONSTRUCTION.....
4.1 Linear Dynamic Harmonic Regression
PRACTICAL DEVELOPMENT OF SYNTHETIC INDICATOR
5.1 Programming Implementation for Linear Dynamic Harmonic Regression
EMPIRICAL RESULTS
6.1 Insights from the Indicator
6.2 Predictive Performance Evaluation
CONCLUSIONS
REFERENCES

The **objective** of the thesis is to create a synthetic leading indicator for the U.S. economy. The focus is on predicting recessions and effectively selecting essential economic components through meticulous analysis of economic data. The research aims to contribute to a better understanding of economic cycles in the United States.

Methodology:

- **Data collection:** to source monthly seasonally unadjusted time series data from the FRED database and identify their trends with the use of Linear Dynamic Harmonic Regression.
- **Variable selection:** compare recession and expansion confirmations sourced from the differenced trends of candidate data with recessions and expansions announced by the National Bureau of Economic Research of the United States.
- **Synthetic Indicator Construction:** integrate filtered time series data into a leading indicator built using the custom E4 Octave library with the LDHR method.