CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

The Impact of Economic Indicators on National Income

A graduate project submitted in partial fulfillment of the requirements

For the degree of Master of Science in Business Analytics

By

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Abstract

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This study employs advanced machine learning methodologies to investigate the predictive

relationships between key economic variables and high-income country classification,

leveraging datasets from the World Data Bank covering all countries from 2021 to 2023. The

analysis focuses on five critical indicators: Gross Domestic Product (GDP), GDP growth,

foreign investment, inflation rate, and government spending, examining their influence on

economic performance and national income levels. The research is structured around

descriptive and predictive analytics objectives. Descriptive analytics aim to examine GDP,

GDP growth, foreign investment, inflation rate, and government spending across various

countries over the past three years. It also seeks to analyze and summarize relationships

between these economic indicators and national income levels, providing foundational insights

into economic trends and their implications. Predictive analytics focus on developing machine

learning models that accurately predict whether a country is classified as high-income, while

evaluating and comparing the effectiveness of algorithms, such as logistic regression, decision

trees, random forests, XGBoost, and neural networks, in forecasting high-income status. The investigation addresses several key research topics: changes in GDP and income level distributions between 2021 and 2023; differences in GDP growth across income levels; significant economic indicators predicting high-income countries; the collective impact of foreign investment, government spending, and inflation on GDP; and the comparative performance of neural networks versus traditional models in identifying significant indicators. Python's powerful libraries for data visualization and analysis are employed to clean, extract, and explore datasets systematically, enabling the development of models that uncover patterns, relationships, and trends in economic performance. The anticipated findings aim to identify the most reliable predictive models and highlight the key economic indicators driving high-income classifications. These insights will provide valuable tools for economists and policymakers to optimize decision-making processes for economic growth and development. Furthermore, this research demonstrates the transformative potential of machine learning in advancing economic forecasting methodologies, laying the groundwork for future studies to refine models and expand applications across diverse global contexts.