Final Project Proposal

Time Series Analysis for Energy and Environment Applications | ENERGY 797.01.Sp25

Project Introduction

Group Member Names

1. Mazhar Bhuyan

2. Jisup Kwak

3. Aye Nyein Thu

4. Yuqi Yang

Project Title

Forecasting Unemployment Rate

GitHub Project Repository Link

https://github.com/YuqiY7/BhuyanKwakThuYang_ENV797_TSA_FinalProject

Background of the Project

- The economic literature indicates that an appropriate level of unemployment is **key to facilitating economic development** of a country.

- The impact of high unemployment rate could be pervasive and extends across **various economic actors**.
  - **Individuals and Households**: Tightened financial security; Limited spending on essential services such as education and healthcare, potentially leading to long-term human capital depreciation; Reducing social and psychological well-being
  - **Businesses**: Potential reduction in productivity; Uncertainty in future revenue streams; Decreased sales revenue resulting from diminished aggregate demand and consumer purchasing power.
  - **Governments**: Potential reduction in tax revenue; Increased fiscal burden associated with the provision of social safety nets, including unemployment benefits and welfare programs; Necessity for active macroeconomic policy adjustments to mitigate the adverse effects of unemployment

Motivation of the Project

- **Recent shifts in external global trends** present compelling avenues for analyzing their potential impact on unemployment rates and labor markets in countries.
  - **Technological innovations and automation**: The impact of accelerating pace of automation, artificial intelligence, and digital transformation in reshaping job markets and employment
  - **Geopolitical trends**: Geopolitical instability; Evolving global power structures; and the rise of protectionist measures, exemplified by increased tariffs imposed by the US and retaliatory tariffs by other nations
  - **Changes in population dynamics**: Increased in aging population in developed countries, Continued population growth in underdeveloped countries, Migration patterns

- Given the multifaceted impacts of evolving global labor market trends, it is **vital to accurately forecast the unemployment rate** in the near- and long-term future to proactively lay out **monetary and fiscal policies**, formulate **evidence-based economic strategies** and implement **targeted interventions** in response to the external shocks.

Research Questions & Data Source

Research Question

- What are the patterns of change and predictable trends observed in unemployment rates over time?

Potential Data Sources

- International Labour Organization (ILO)

- World Bank's World Development Indicators or Country Classification

Thank You!