NOWCASTING MACROECONOMIC INDICATORS USING GOOGLE TRENDS

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INTRODUCTION

- Goal: To develop a methodology to predict macroeconomic factors in real time using Google Trends.
- Factors: GDP, retail trade and retail e-commerce sales.
- Google Trends has daily, weekly, and monthly reports for Google queries volume.
- Study will involve queries related to different industries depicting business cycles for estimating economic factors in real time.

GOALS

- **Nowcasting quarterly GDP:** To nowcast the macroeconomic indicator GDP quarterly at national level by using the real time Google Trends.
- **Nowcasting monthly retail trade sales:** To nowcast the monthly retail trade sales at national level.
- **Nowcasting retail e-commerce sales:** To nowcast the monthly retail e-commerce sales at national level.
- **Nowcasting economic indicators at industry level:** If time permits, to nowcast quarterly GDP, monthly retail trade sales and monthly e-commerce retail sales at the industry level for a selection of key industries. Also, we will try to nowcast monthly GDP at national level.

DATASET

- Data set for this project are **open source**.
- There are 6 csv files including content as mentioned in goals.
- Additionally, we have **Google Trends API**, website to get real time data for macroeconomic indicators.
- Our focus will be on the data starting from 2004 as we have Google trends available from that period.

TOOLS

- **Programming Language:** Python for data cleaning, model fitting and Visualization.

- **Workflow Channel:** Git Hub

- **Communication with Project Partners:** MS Teams, Email, weekly meetings on Thursdays.

WORKFLOW


Business Issue Understanding
Data Understanding
Data Preparation
Exploratory Analysis/ Modeling
Validation
Visualization & Presentation

METHODOLOGY

- **Econometric models:** Dynamic Factor Model and Autoregressive models.

- **Machine learning models:** LASSO, Random Forest and Neural Networks depending upon the time constraints.

TIMELINE

- **Week 1:** Project and Data Understanding & Proposal writing
  - Discussion with project partners for scope of work – 2 days
  - Literature review – 1 days
  - Proposal document and review – 2 days

- **Week 2:** Data Preparation and Exploratory Analysis
  - Clean the dataset and extract the useful factors–1 day
  - Handle the missing values using interpolation of the data – 1 day
  - Standardization and Transformation – 2 days
  - Exploratory analysis – 1 day
  - Follow-up meeting for review

THANK YOU