JSC370 Final Report

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Introduction

We currently live in a special time in history. While we are still dealing with an ongoing global pandemic, the economy is also faced with high inflation. High inflation often leads to higher cost of living and decreased living standard.

This project aims to answer how inflation is tied to an economy and the economic growth, and how one may predict the future inflation given current state of the economy. In particular, the following questions will be answered

1. How does inflation affect the overall economy and economic growth (e.g. GDP)?
2. How does inflation affect the standard of living i.e. CPI?
3. Given the current state of the economy, how may one predict the future inflation?

Methods

Data Source

The main source of data is from Organisation for Economic Co-operation and Development (OECD). Data from OECD are downloaded as annual data in CSV files and includes the following information.

Category	Details
GDP	$USD millions, per capita
Population	# million persons, growth, % working age
Employment Rate	% of working age population
Inflation	annual %
Prices	housing (rent) and share prices
Interest Rate	government short-term interest rate
Household stats	Savings and spending

- GDP in USD and GDP per Capita
- Population and Working Age Population
- Employment Rate
- Inflation
- Housing Prices and Share Prices
- Short-term Interest Rate
- Household Savings and Spending

Data Cleaning

Overall, the main tools used for the project are R and Python.

Python is focused towards data collection from Finnhub and Alpha Vantage for market and some economics data focused in the US. Note that an alternative option to storing the data for time series, especially stocks prices, is the use of K-database (`KDB`) with the use of `q` language. However, this adds to the complexity of the project with the installation requirement, license and etc.; it is thus not used.

R is used for the analytics, data cleaning, and constructing interactive plots

- `tidylr` for piping
- `dplyr` for table manipulations
- `data.tables` for more table manipulations
- `ggplot` and `plotly` for visualization

Results

Conclusions and Summary