Accessing and Analyzing Data from FRED and DB.nomics

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1   Introduction

FRED (Federal Reserve Economic Data)

FRED is maintained by the *Federal Reserve Bank of St. Louis* St. Louis (2024) and provides thousands of U.S. and international time-series indicators, including GDP, inflation, employment, interest rates, and financial data. Its strengths include a clean interface, extensive metadata, and a reliable API for programmatic access.

DB.nomics

DB.nomics is an open global data aggregator that combines macroeconomic and statistical datasets from a wide range of providers such as Eurostat, OECD, IMF, World Bank, and various national statistical offices DB.nomics Team (2024). It aims to make economic data transparent, accessible, and comparable across countries and institutions.

Overall Significance:

Economic data platforms support evidence-based decision-making in government, business, and research. They allow users to monitor economic performance, evaluate policy outcomes, analyze historical trends, and create reproducible workflows for academic or professional projects.

2   Student Perspective

2.1   Educational Value

Access to real-world economic data enhances students' understanding of key economic theories such as GDP, inflation, and unemployment Mankiw (2021), and encourages development of *data literacy*, *quantitative reasoning*, and *critical analysis*, allowing students to connect theoretical knowledge with practical application.

2.2   Research and Projects

The availability of reliable economic data enables students to perform *empirical research*. It also provides reliable data sources for coursework in *economics*, *finance*, *public policy*, and *data analytics*.

2.3   Skill Development

Working with real datasets offers students the opportunity to practice using analytical tools such as *Excel*, *R*, *Python*, and *Stata*.Through these experiences, they build *analytical*, *statistical*, and *data visualization* skills valued in both academia and the job market.

3   Comparison of FRED and DB.nomics

Both platforms offer economic indicators, but they differ in focus, structure, and best-use scenarios.

Feature	FRED	DB.nomics
Main Focus	U.S. economic and financial indicators + selected global data	Global, multi-provider datasets (Eurostat, OECD, IMF, national statistical offices)
Best Use	U.S. macroeconomic trends, financial indicators, interest rates	International comparisons, cross-country research, multi-provider datasets
Features	Clean charts, metadata, strong API, high reliability	Wide provider coverage, standardized downloads, flexible filters
Limitations	Primarily U.S.-centered	Interface less polished; some datasets vary in formatting

In practice, **FRED** is excellent for U.S. macro-financial data, while **DB.nomics** is ideal for global statistical analysis.

4   How to Access Data

4.1   Website Interface

Both platforms provide intuitive interfaces for exploring, visualizing, and downloading datasets.

4.1.1   *FRED*

1. Go to fred.stlouisfed.org
2. Use the search bar (e.g., type "U.S. Inflation Rate" or "GDP").
3. Click on the desired series.
4. Explore the interactive chart.
5. Click **Download** → CSV, Excel, or JSON.

4.1.2   *DB.nomics*

1. Go to db.nomics.world

2. Use the search box or browse by provider (e.g., Eurostat, OECD).

3. Choose the dataset and variables you need.

4. Use filters (e.g., time range, country, indicator).

5. Click **Download** → CSV, XLSX, or JSON.

Website interfaces are suitable for quick exploration, data previews, and simple visualizations.

5 APIs (Automated Access for Analysis)

APIs offer programmatic access to datasets and are widely used in academic research because they ensure **reproducibility**, **automation**, and **consistency** Peng (2011).

5.0.1 *FRED API*

The R package `fredr` lets you retrieve U.S. economic data, such as GDP, inflation, unemployment, and interest rates. You need a free API key to use it.

5.0.2 *DB.nomics API*

The R package `rdbnomics` provides access to global datasets from many providers (e.g., IMF, World Bank, Eurostat). No API key is required.

6 How to Analyze Data (Spreadsheet)

6.1 Step 1: Download Data

Example: U.S. GDP (Quarterly).

Users can download CSV or Excel files directly from FRED or DB.nomics.

6.2 Step 2: Open in Excel

- Open the downloaded file in Excel.
- You'll usually see columns like Year and GDP.

6.3 Step 3: Create a Simple Chart

Highlight the relevant columns and insert a line chart to visualize trends over time.

Year	GDP (USD Trillions)
2020	19.96
2021	23.43
2022	25.86

Year	GDP (USD Trillions)
2023	27.53
2024	29.15
2025	30.49

Table 1: Example Dataset (simplified):

7 Analyzing Data using R

R is a powerful tool for working with economic time-series data. It enables data cleaning, transformation, visualization, and statistical analysis.

You'll mainly use two packages:

- fredr → to access FRED data via API
- ggplot2 → to visualize trends

8 References

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