Taking FRED into the Classroom

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How I use FRED

• As a teacher
  • Lecture notes
  • Classroom assignments

• As a researcher
  • Stata and FREDUSE

• As a textbook developer
  • Countless hours are spent updating data in macro/money and banking textbooks.
FRED in the Classroom

• FRED has lot of data....

• So?

• How can faculty and students engage with FRED to enhance learning?
“Let’s start by googling FRED”
Download, graph, and track **397,000** US and international time series from **79** sources.

Search FRED data e.g., gdp, inflation, unemployment

Browse data by **Tag, Category, Release, Source, Release Calendar** or **Get Help**

**FRED News**
- Changes to Interest Rate Series in FRED
- FRED-MD Has Been Updated

**FRED Blog**
- Engel’s law is still good food for thought

**Research News**
- Working, but Not at Capacity

**GEOFRED**
- Build your own U.S. data map.
  - Show FRED data at state, county, and metropolitan statistical area levels.

**AT A GLANCE**

**CPI**
- **+1.1 % Chg. from Yr. Ago on Aug 2016**

**Real GDP**
- **1.4 % Chg. from Preceding Period on Q2 2016**

**IP**
- **−0.4 % Chg. on Aug 2016**

**US/Euro FX Rate**
- **1.1238** U.S. $ to 1 Euro on **2016-09-30**

**Civ. Unemploy. Rate**
- **5.0 % on Sep 2016**

**Payroll Employment**
- **+156 Chg., Thous. of Persons**
Overview

• Some general observations...

Micro = FUN!

Macro = No FUN!

• The value of macroeconomics is not realized until after college.
  • Is this their fault?
Learning Outcomes


1. Access existing knowledge
2. Display command of existing knowledge
3. Interpret existing knowledge
4. Interpret and manipulate economic data
5. Apply existing knowledge
6. Create new knowledge
Teaching Macroeconomics

• Who is our audience?

• What do students need to know for upper level courses?

• How can we make macroeconomics relevant and of interest to students across disciplines
Teaching Macroeconomics

• Traditional economics courses emphasize theoretical models with old data.

• Data allows students to...
  • learn how variables compare across countries
  • learn how variables have changed over time
Why FRED?

• Has nearly all macroeconomic series that are covered in many courses:
  • Principles of Macroeconomics
  • Intermediate Macroeconomics
  • Money, Banking, and Financial Markets

• Can also be useful for teaching:
  • Econometrics
  • International Finance
  • Economic Growth
Why FRED?

- Data are easy to find and visualize
- Graphs are user friendly
- Provides links to original data sources
- One stop shop
What is more informative?

Figure 8-1: The U.S. Unemployment Rate, 1948-2017

Unemployment rate

Year

Data from Bureau of Labor Statistics;
National Bureau of Economic Research;
Federal Reserve Bank of St. Louis.

Herzog, Ph.D. - Beyond the Numbers
Civilian Unemployment Rate (UNRATE)

Observation: Sep 2016: 5.0 (+ more)
Updated: 8:16 AM CDT

Units: Percent, Seasonally Adjusted
Frequency: Monthly

1Y | 5Y | 10Y | Max
1948-01-01 to 2016-09-01

Shaded areas indicate US recessions
Source: US. Bureau of Labor Statistics
fred.stlouisfed.org
Basic Economic Concepts

• Supply and Demand
• GDP
• Inflation
• Unemployment
• Growth
Supply and Demand
Gross Domestic Product
Inflation and Real Values
Unemployment and Labor Market
Economic Growth
Other Fun Graphs
Shaded areas indicate US recessions.
Benefits

Student learning is improved

Students learn the basic principles of data analytics and visualization

Students begin to develop the tools for future research

Fun way of learning
Here's my attempt to create the ugliest FRED chart ever:
Can you make it uglier?
fred.stlouisfed.org/graph/?graph_i.... #UglyChart
Engaging Students

• It starts with the faculty member using data in the classroom

• But the learning happens through well developed student assignments.
Data 3 - Inflation

* Required

Name (Last, First) *

Your answer

Email *

Your answer

Student ID *

Your answer

Comparing Prices over Time

The graph below compares the CPI for all items with the CPI for tuition, educational books, and kid's toys. On the FRED homepage under "Browse data by" select category. Under the category "Prices" select "Consumer Price Indexes (CPI and PCE)". Start with the series "Core Price Index for All Urban Consumers (CPIU100) Not Seasonally Adjusted".
Data 3 - Quinn Anderson

Data Assignment 3: Inflation and CPI

Comparing Prices – Anderson

Personal CPI Index – Anderson

Personal Inflation Rate – Anderson

Inflation Across Countries – Anderson
Data Assignment 4 - Bond Market

* Required

Name (Last, First) *

Your answer

Student ID *

Your answer

Email *

Your answer

Comparing Financial Stress and Interest Rates

The Federal Reserve Bank of St. Louis publishes a weekly index of financial stress (FRED code: STLFSI) that summarizes strains in financial markets, including liquidity problems. For the period beginning in 1994, plot this index and, as a second line, the difference between the 30-year U.S. Treasury bond yield...
Data Assignment 4-Fall 2016 Zalesky

Economic Uncertainty Spain versus UK

Financial Stress and Interest Rates

Great Recession Spread

Great Depression Spread
Presentation

• Until recently most presentation software were unable to show iframes
  • You can embed FRED graphs in web pages
  • During presentations you were forced to use static, PNG image files.

• Liveslides and Web Viewer allow you to embed iframes.
  • Liveslides is free from Poll Everywhere and more robust
  • Web Viewer is free through the Microsoft store
Wish List

• The ability to add a graph to a dashboard from the graph page

• More data
  • Historical data – Maddison

• Identifying a single point in a scatter plot

• Create custom title and axis labels
Conclusion

• Macroeconomics is evolving, we need to evolving in our teachings.
• FRED provides an easy, user friendly interface to help students learn macroeconomics and data analytics and visualization
• Can be used as a springboard for learning other statistical packages (Excel, R, Stata)