

# FRED ADD-IN

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## PC USER'S GUIDE

FOR EXCEL® 2010



ECONOMIC RESEARCH  
FEDERAL RESERVE BANK OF ST. LOUIS  
P.O. BOX 442  
SAINT LOUIS, MISSOURI, 63166  
[RESEARCH.STLOUISFED.ORG](http://RESEARCH.STLOUISFED.ORG)



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## INTRODUCTION

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The FRED® (Federal Reserve Economic Data) database contains over 60,000 economic time series. On the FRED website users can view data, create charts, and download data. The FRED Add-in provides data users with an additional means of accessing the FRED database.\* After downloading and adding the FRED Add-in to Microsoft® Excel®, users can download any FRED data series directly into an Excel worksheet in seconds. In addition to downloading the data, the FRED Add-in allows users to: choose a data manipulation (i.e., growth rate), specify a date range (i.e., 1960:Q1 to 2010:Q4), aggregate data to a lower frequency (i.e., weekly to monthly), search for data, and browse popular data series.

\*The FRED Add-In uses the FRED API, additional information about the API can be found at: <http://api.stlouisfed.org/docs/fred/>

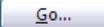
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## GETTING STARTED

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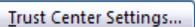
FRED was designed to make accessing and using economic data as easy as possible. The FRED Add-in is the next step toward improving the usability of economic data for students, researchers, and businesspeople alike. The FRED Add-in has been designed with a simple interface that provides users with a fast way to get economic data from FRED into Excel for conducting analysis using all of the tools Excel has to offer. Just follow the installation procedures, and in minutes you'll be downloading FRED data directly into Excel.

## INSTALLATION

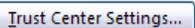
1. Extract the Add-in folder (Fred) on to your computer. You should not move this folder after you install the Add-in.
2. Open Microsoft® Excel® and click on the *File Button*  in the upper left-hand corner of the window.
3. Choose  from the drop down menu; a window will appear.
4. On the left side of the window, choose *Add-ins* and click *OK*.
5. On the bottom of the window, choose *Go*. Manage:  .
6. In the new window, choose  and locate the file *fred.xlam* that you downloaded and click *OK*.
7. Make sure to check the box next to FRED:  FRED . Click *OK*.
8. You will be prompted with a security warning asking if you want to allow macros and data connections from the Add-in. Click *OK*.
9. Close and re-open Excel to verify that the Add-in has been installed correctly.

**Important Security Note:** You may want to change your Excel security settings to avoid the data connections warning each time you open Excel. You can do this in two ways:

Option 1: Add the FRED folder as a “trusted location” (suggested).

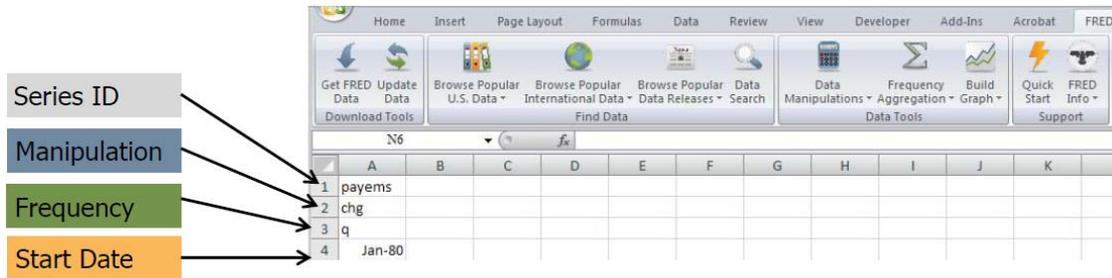
1. Open Excel and click on the *File Button*  in the upper left-hand corner of the window.
2. Choose  from the drop down menu; a window will appear.
3. On the left side of the window, choose *Trust Center*.
4. Click on .
5. Choose *Trusted Locations* from the menu on the left.
6. Click on *Add New Location*.
7. Browse for the FRED folder and click *OK*.

Option 2: Enable all data connections.

1. Open Excel and click on the *File Button*  in the upper left-hand corner of the window.
2. Choose  from the drop down menu; a window will appear.
3. On the left side of the window, choose *Trust Center*.
4. Click on .
5. Choose *External Content*.
6. Choose *Enable All Data Connections* under the security settings for data connections.

### QUICK-START GUIDE\*

Downloading FRED data into Excel is very simple: The key is understanding where (which rows) in the Excel worksheet to input a series ID, manipulation, frequency, and start date. The only information necessary to *Get FRED Data* is the series ID; if the other cells are left blank, default settings will be used.



After you have input the desired information, click the *Get FRED Data* button.

#### Series IDs

Regular FRED users may be familiar with the FRED series IDs. For example, *payems* is the series ID for Nonfarm Payroll Employment. If you know the series ID, type it into a cell in the first row of your worksheet. If not, it is possible to browse the popular FRED data series using the *Find Data* menu on the FRED-Excel toolbar.

#### Data Manipulations

If row 2 is empty, by default, the FRED Add-in will download your data “in levels” (without any manipulation). If you would prefer to download the growth rate of a series, simply type the desired manipulation into the second row. If you don’t know the manipulation ID, click on the calculator icon on the FRED-Excel toolbar and choose the desired manipulation. Note that because FRED uses levels and rounded data as published by the source, calculations of percentage changes and/or growth rates in some series may not be identical to those in the original releases.

#### Frequency Aggregation

If row 3 is empty, by default the FRED Add-in will download your data “as reported” by the primary source. For example, Nonfarm Payroll Employment is reported at a monthly frequency. However, you can choose to aggregate your FRED data to a lower frequency by entering your desired frequency ID. If you don’t know the frequency ID, just click on the  $\Sigma$  icon on the FRED-Excel toolbar and choose your desired frequency. Important Note: The FRED Add-in will not disaggregate data (i.e., you cannot download monthly data at a daily frequency).

#### Choose a Start Date

If row 4 is empty, by default the FRED Add-in will download the entire available history of the series. If you want only the last 10 years of data, enter your own starting date in the fourth row and a shorter history of data will be downloaded. Don’t worry about the date format, the Excel auto-format takes care of this. The FRED Add-in will make the necessary adjustments if the starting date you entered doesn’t exactly match the data series.

\*You can always access this quick start guide by clicking on this icon on the Excel toolbar.



### DOWNLOADING DATA

Before downloading any data, make sure your computer is connected to the Internet. If the FRED Add-in has been successfully installed, a tab labeled FRED should appear on the ribbon of your Excel window. On the FRED tab you will find a series of buttons.



There are two ways to download data using the FRED add-in: (1) download by individual series (2) download series in a dataset with matching date ranges and frequencies. The first option is much simpler and is ideal for quick projects, while the second option is helpful for users conducting more sophisticated analysis.

#### DOWNLOADING INDIVIDUAL SERIES

Again, downloading FRED data is as simple as typing a FRED series ID (e.g., UNRATE) into the first row of the workbook and clicking the *Get FRED Data* icon.<sup>1</sup>

	A	B	C	D
1	unrate			
2	lin	Percent		
3	M	Monthly		
4	1/1/1948 1948-01-01 to 2011-06-01			
5	<a href="#">Civilian Unemployment Rate</a>			
6	U.S. Department of Labor: Bureau of Labor Statistics			
7	date	value		
8	1/1/1948	3.4		
9	2/1/1948	3.8		
10	3/1/1948	4.0		
11	4/1/1948	3.9		
12	5/1/1948	3.5		
13	6/1/1948	3.6		

Once you click *Get FRED Data*, Excel will automatically download the requested data from the FRED website. If no other options (i.e., manipulation, start date, frequency) are specified, by default, all available observations will be downloaded and no data manipulations will occur. The series name, units, and data source are also downloaded with the data. The series name is automatically converted into a hyperlink to the series information on FRED (e.g., [research.stlouisfed.org/fred2/series/unrate](http://research.stlouisfed.org/fred2/series/unrate)).

An error message appears for an invalid: (1) series; (2) frequency; (3) data manipulation (e.g., growth rate of a %).

<sup>1</sup> To maintain a reasonable processing speeds, up to 50 series IDs can be downloaded into a single worksheet.

	A	B	C	D	E	F
1	money		payems		unrate	
2	lin		lin		pc1	
3			w		M	
4						
5			All Employees: Total nonfam Civilian Unemployment Rate			
6			U.S. Department of Labor: Bu U.S. Department of Labor: Bureau of Labor Statistics			
7						
8	Invalid Series ID		Cannot disaggregate data		Invalid data manipulation	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						

**Microsoft Excel**

Errors have occurred.

See row 8 for more details.

OK

To include an additional FRED series, move to the next column (in the first row) and type in another series ID.

	A	B	C	D	E	F	G	H
1	unrate		payems		m2			
2	lin	Percent	lin	Thousands	lin	Billions of Dollars		
3	M	Monthly	M	Monthly	W	Weekly, Ending Monday		
4	1/1/1948	1948-01-01 to	1/1/1939	1939-01-01 to	11/3/1980	1980-11-03 to 2011-07-18		
5	<a href="#">Civilian Unemployment Rate</a>		<a href="#">All Employees: Total nonfam</a>		<a href="#">M2 Money Stock</a>			
6	U.S. Department of Labor: Bureau of Labor Statistics		U.S. Department of Labor: Bureau of Labor Statistics		Board of Governors of the Federal Reserve System			
7	date	value	date	value	date	value		
8	1/1/1948	3.4	1/1/1939	29923.0	11/3/1980	1591.4		
9	2/1/1948	3.8	2/1/1939	30100.0	11/10/1980	1592.9		
10	3/1/1948	4.0	3/1/1939	30280.0	11/17/1980	1596.3		
11	4/1/1948	3.9	4/1/1939	30094.0	11/24/1980	1597.2		
12	5/1/1948	3.5	5/1/1939	30300.0	12/1/1980	1596.1		

DOWNLOADING SERIES IN A DATASET

It is now possible to download multiple series with the same frequency and date range using the "1date" option in the FRED add-in. To enable the dataset option in a worksheet simply type "1date" into cell A1. The FRED add-in will recognize this term.

	A	B	C	D	E	F	G
1	1date	unrate	payems	m2			
2	m	lin	lin	lin			
3	Jan-00	Percent	Thousands	Billions of Dollars			
4	Jan-10	<a href="#">Civilian Unemployment Rate</a>	<a href="#">All Employees: Total nonfam</a>	<a href="#">M2 Money Stock</a>			
5		U.S. Department of Labor: Bureau of Labor Statistics	U.S. Department of Labor: Bureau of Labor Statistics	Board of Governors of the Federal Reserve System			
6	date	value	value	value			
7	1/1/2000	4.0	130781.0	4654.9			
8	2/1/2000	4.1	130903.0	4670.6			
9	3/1/2000	4.0	131374.0	4696.5			
10	4/1/2000	3.8	131662.0	4751.0			

To download series into a dataset, enter the frequency in cell A2, the Start Date in cell A3, and the End Date in cell A4. In the first row of the remaining columns enter the series ID's and in the second row enter the data manipulation.

The next section reviews the available features in the FRED Add-in.

## FEATURES

The features of the FRED Add-in are designed with the general user in mind. The Add-in offers some basic conveniences without unnecessary complexity. Future versions of the Add-in may include more advanced settings. Until then, advanced users should rely on the tools in Excel.

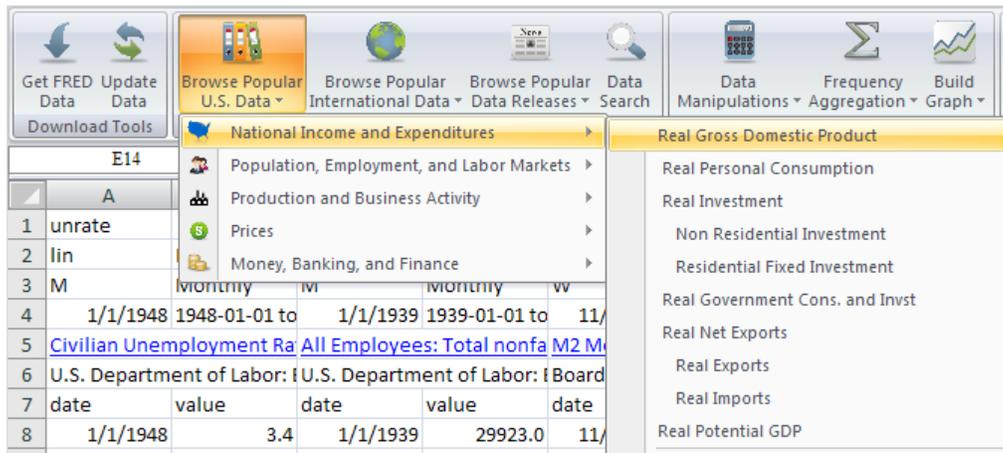
### FINDING DATA SERIES ON FRED

Each economic data series in FRED has a unique series ID. The FRED Add-in requires users to input a series ID into the first row of cells in their workbook.

There are two ways to find a data series using the FRED Add-in: (1) Browsing data using the drop-down lists on the Excel ribbon and (2) using search tool on the ribbon. Browsing is the fastest and easiest way to locate the most popular data in FRED because this option is limited to approximately the 100 most popular economic data series and 15 major economic press releases. Searching, on the other hand, provides access to over 30,000 data series in the FRED database.

### BROWSE DATA

If you are not familiar with the FRED series IDs, browsing is the easiest way to locate data. Click on one of the *Browse* buttons in the Data Tools section of the ribbon (e.g., Browse Popular U.S. Data), and you'll find the data series have been organized into major groups. For example, popular U.S. data are organized into five sections, and popular international data are organized by country.



Once you've located a data series of interest, click on the name and the FRED series ID is automatically input into the active cell.<sup>2</sup> Click the *Get Data* button and your data will be retrieved. Once a data series has been selected and input into the active cell, the active cell will automatically move one column to the right so numerous series can easily be selected one after another.

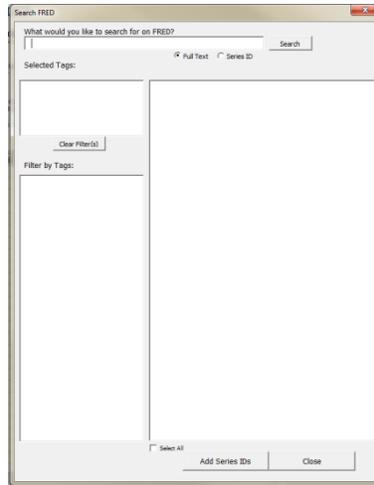
<sup>2</sup> A FRED series ID needs to be entered into the first row of the active worksheet; if the active cell is not in the first row, you will receive an error message.

SEARCH FOR DATA

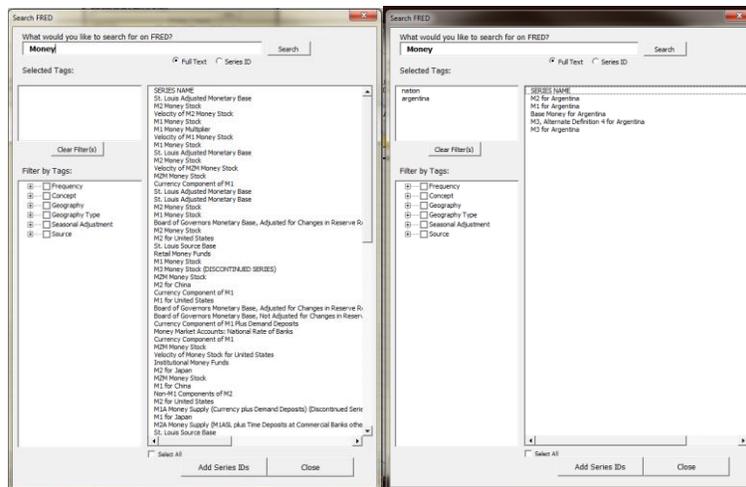
To search for data in FRED, simply click on the magnifying glass icon on the ribbon.



A pop-up window will appear: Input a query here to search the FRED database



Search results on the right are sorted by popularity (based on the number of downloads) to help users identify the series they are most likely interested in. The results window displays the series name, id, units, seasonal adjustment, and frequency: Scroll to the right to see additional information. The search results can be filtered using data series tags. For example, after selecting geography, and Argentina , search results are narrowed(see figure on right)



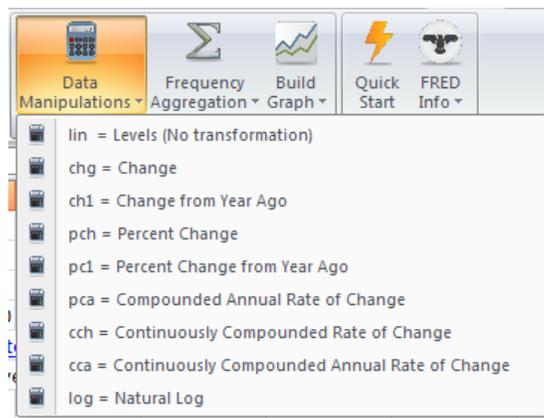
Add the IDs into your spreadsheet by selecting the variable(s) of interest and click *Add Series IDs*.

## DATA MANIPULATIONS

One of the challenges for many users of economic data is manipulating data series into growth rates. The FRED Add-in makes this easy by allowing users to select their desired data manipulation. Just as row 1 is reserved for a series ID, row 2 is reserved for a data manipulation. Type the desired data manipulation (e.g., chg) directly below the series ID and click the *Get FRED Data* button (see below). If no manipulation is specified, the data will be downloaded with no transformation.

	A	B
1	PAYEMS	
2	chg	
3		
4		

If you're unfamiliar with the data manipulation IDs, the FRED Add-In will help you: The *Data Manipulations* button includes commands for all the data manipulations. Click on the desired manipulation, and the ID will appear in the active cell.



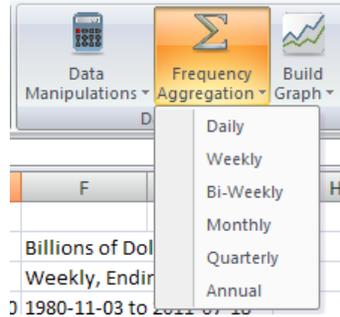
The manipulations, abbreviations, and formulas are

- Levels (lin):  $x_t$
- Change (chg):  $x_t - x_{t-1}$
- Change from Year Ago (ch1):  $x_t - x_{t-n}$
- Percent Change (pch):  $((x_t / x_{t-1}) - 1) * 100$
- Percent Change from Year Ago (pc1):  $((x_t / x_{t-n}) - 1) * 100$
- Compound Annual Rate of Change (pca):  $((x_t / x_{t-1})^n - 1) * 100$
- Continuously Compounded Rate of Change (cch):  $(\ln(x_t) - \ln(x_{t-1})) * 100$
- Continuously Compounded Annual Rate of Change (cca):  $((\ln(x_t) - \ln(x_{t-1})) * 100) * n$
- Natural Log (log):  $\ln(x_t)$

where  $x_t$  is the value of the FRED series  $x$  at time  $t$  and  $n$  is the number of observations per calendar year. For example  $n = 12$  for monthly data and  $n = 4$  for quarterly data.

### FREQUENCY AGGREGATION

It can be useful to create a data worksheet of series with matching frequencies. With the FRED Add-in, it is easy to aggregate data to lower frequencies (i.e., daily to monthly) using the frequency aggregation option. The data frequencies are input in the third row of the worksheet. Available frequencies include **Daily**, **Weekly** (ending Friday),<sup>3</sup> **Biweekly**, **Monthly**, **Quarterly**, and **Annual** (aggregation IDs are in bold). The aggregation button on the toolbar can be used for easy browsing and cell input.



After selecting a frequency and clicking the *Get FRED Data*, the following results will appear:

	A	B	C	D
1	payems			
2	lin	Thousands		
3	a	Monthly		
4	1/1/1939 1939-01-01 to 2011-06-01			
5	<a href="#">All Employees: Total nonfarm</a>			
6	U.S. Department of Labor: Bureau of Labor Statistics			
7	date	value		
8	1/1/1939	30644.0		
9	1/1/1940	32409.0		
10	1/1/1941	36609.0		
11	1/1/1942	40230.0		

By default, averages are used as the aggregation method. Alternative aggregation methods include the sum (sum) and end of period (eop). To use a different aggregation method, type a comma and the method into the cell (e.g., a,sum) and then update your data. Users who use other aggregation methods can become familiar with this notation and can type *a,sum* or *a,eop* directly into the cell. The menu options have been limited for ease of use.

<sup>3</sup>Weekly data series are not necessarily released over the same time intervals (e.g., weekly, ending Monday; weekly, ending Wednesday). See the series frequency on FRED or check the observation dates. At this time, daily data are always aggregated to *weekly, ending Friday*.

### SET CUSTOM DATE RANGES

If you don't want the entire history of a series, the FRED Add-in lets you specify the start date. Just as row 1, row 2, and row 3 are reserved for the FRED series ID, data manipulation, and frequency, row 4 is reserved for a start date.

	A	B	C	D
1	payems			
2	lin	Thousands		
3	a	Monthly		
4	1/1/1939	1939-01-01 to 2011-06-01		
5	<a href="#">All Employees: Total nonfarm</a>			
6	U.S. Department of Labor: Bureau of Labor Statistics			
7	date	value		
8	1/1/1939	30644.0		
9	1/1/1940	32409.0		
10	1/1/1941	36609.0		

To add a starting date, type the date below the series ID in row 4 and click *Get FRED Data*. If a start date is older than the first observation, the Add-in returns entire history of the series. The standard Excel auto-formats will occur on the input date (e.g., if no year is entered, Excel will use the current year as default). The FRED Add-in will automatically make adjustments if the date entered does not correspond to a specific observation date. For reference, the date range of the data series is also returned in the cell above the series values.

You can also download a fixed number observations by typing "N=Number." For example if you enter N=20 into the date cell the FRED add-in will only download the most recent 20 observations. This feature can be very useful when generating custom tables and charts that can update automatically. The "N=Number" feature is also available in the "1date" download mode, simply enter N=20 as the start date and FRED will return the last 20 observations of the series in column B.<sup>4</sup>

	A	B	C	D
1	payems			
2	lin	Thousands of Persons		
3	a	Monthly		
4	n=20	1939-01-01 to 2012-02-01		
5	<a href="#">All Employees: Total nonfarm</a>			
6	U.S. Department of Labor: Bureau of Labor Statistics			
7	date	value		
8	01/01/1993	110847.0		
9	01/01/1994	114282.0		
10	01/01/1995	117307.0		
11	01/01/1996	119698.0		
12	01/01/1997	122767.0		
13	01/01/1998	125923.0		

<sup>4</sup>Using both the *1date* and *N=* option together may cause a download error the first time a dataset is created due to frequency/date mismatch. The easiest way to prevent an error is to include a recession indicator series (i.e., USRECD) column B.

### CREATE FRED GRAPHS IN EXCEL

The FRED Add-in also has the ability to create a FRED graph with the simple click of a button. The *Build Graph button* has been included on the FRED toolbar of the Excel workbook.

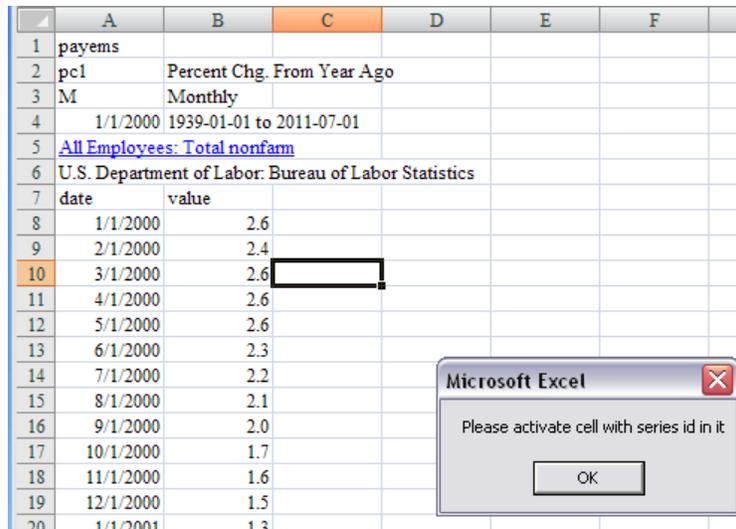


There are three options on this button:

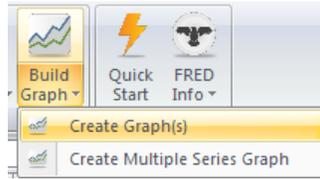
The FRED icon at the top of the button is the *Quick Graph* button; if the active cell is a FRED series ID (and the data have been downloaded), a graph automatically appears.



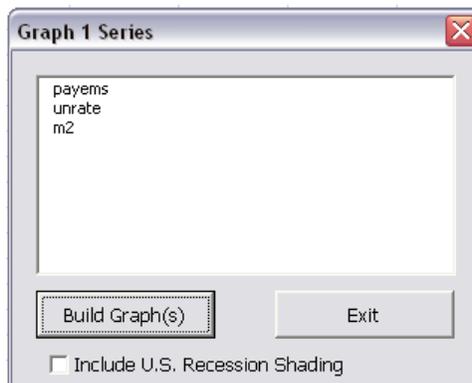
If the active cell is not a FRED series ID, you will be prompted to move to an active cell.



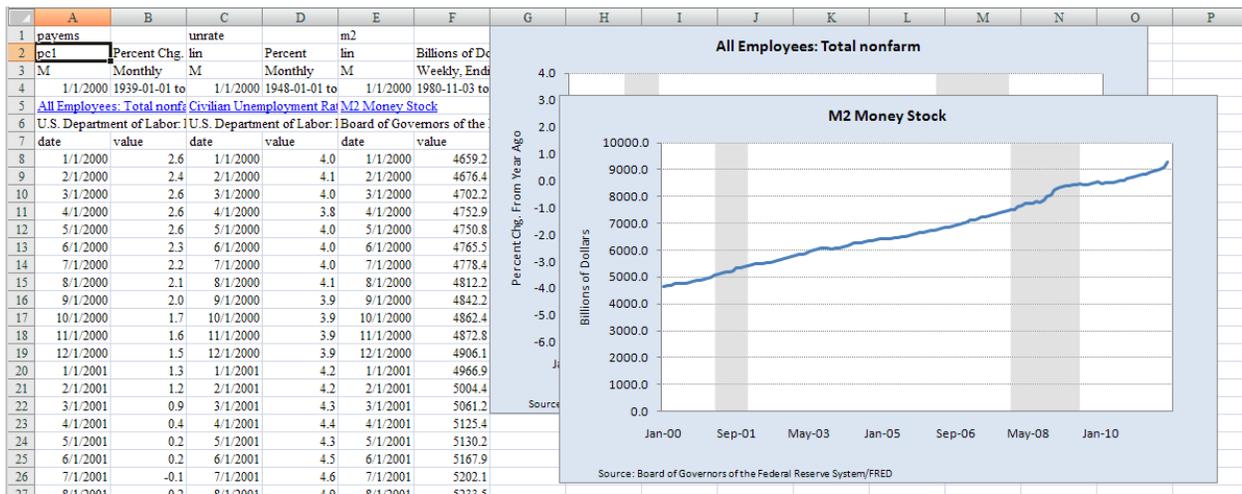
To create multiple graphs, use the dropdown menu on the button. *Create Graph(s)* allows creation of one or more graphs and provides the option of including shaded bars that denote NBER-dated recessions.



Clicking on this button will generate a pop-up window that allows you to choose the downloaded FRED series IDs to graph.

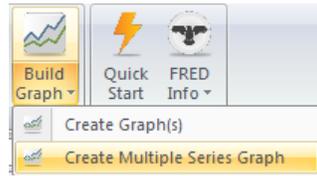


Chose your desired data series and click on the *Build Graph(s)* button. Your graphs will be created and will cascade down the page in a few seconds. Check the *Include U.S. Recession Shading* to for recession bars.

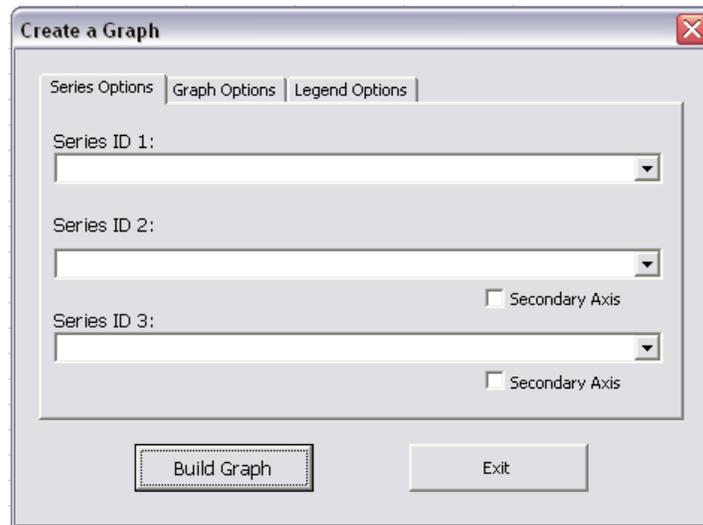


Right-clicking on any graph allows the use of the normal Excel chart options.

To create a single graph with more than one line, use the dropdown menu on the button. *Create a Multiple Series Graph* makes it easy to graph up two three series on a single chart.

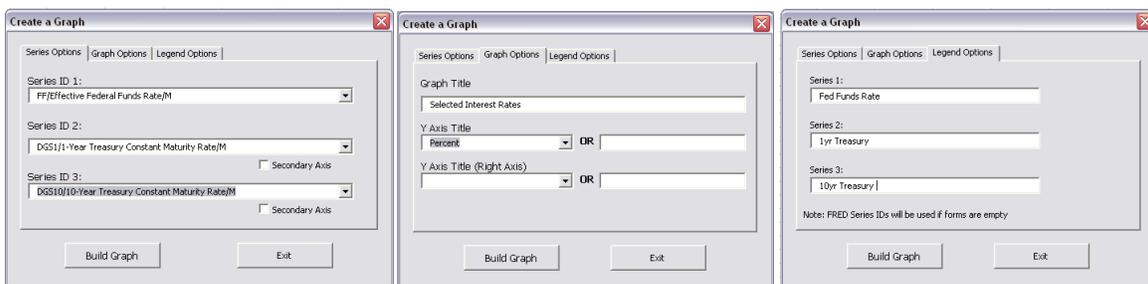


Clicking on this button will generate a pop-up window that allows you to choose the downloaded FRED series IDs to graph.

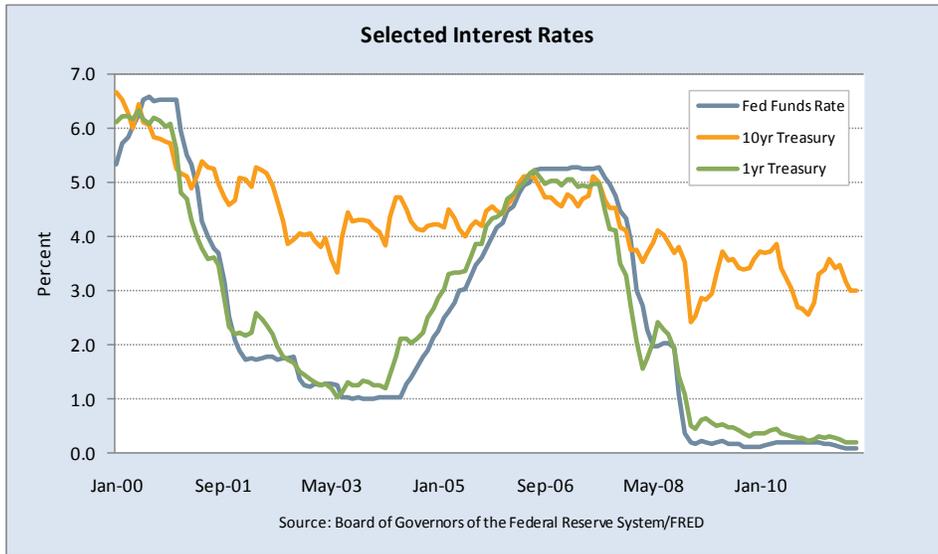


*\*In order reduce the possibility of Excel inaccurately depicting the data, the data in the graph must have (1) the same frequency (2) start on the same date. Although it is possible to create graphs in Excel with data that do not meet these criteria, they need to be handled on a case-by-case basis, making an automatic procedure susceptible to errors.*

Chose your desired data series, set your titles (optional), legend labels (optional) and click on the *Build Graph* button.



And the following graph is created:



**Another great feature!** The graphs created with the FRED graphing buttons will automatically update whenever you click the *Update Data* button.<sup>5</sup>

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<sup>5</sup> Automatic updating will not occur with any graph created with FRED data, but only those graphs that have been created using the FRED *Build Graph* buttons. Graphs may not update correctly if they are moved to another worksheet.

## UPDATING FRED DATA

The FRED Add-in allows users to create workbooks that can be automatically updated with new data. By using this feature, FRED users can create charts and tables that will automatically update as data are released. To update FRED data correctly, it is important to distinguish between the characteristics of the *Get FRED Data* button and the *Update Data* button.

The *Get FRED Data* button is used to download new FRED series IDs. Once the button is selected, the Add-in will search the first 100 columns of the workbook for series IDs. If other information is contained in these cells, an error message is sent and search results are returned.

The *Update Data* button should be used to update existing FRED series IDs. Unlike the *Get FRED Data* button, the *Update Data* button will not look for new series IDs. It will only update the existing data.

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## SUPPORT

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If you are having trouble using the FRED Add-in, please refer to the frequently asked questions before contacting us. We also ask that you limit your inquiries to questions about FRED and the FRED Add-in. Data descriptions and hyperlinks to the primary data providers' websites are available on FRED. If you are having difficulties using Microsoft Excel, please use the Help menu or contact Microsoft.

We continually strive to improve the experience of FRED users, and your suggestions for additional features or data series are always welcome.

## FAQS

Q. What If I don't have a PC with Excel 2010 or 2013?

A. Older versions of the FRED Add-In are available on our website but are no longer supported and do not contain all of the features of the latest version.

Q. What do I do if I get the error "Wrong number of arguments or invalid property assignment"?

A. You have installed multiple versions of the Add-In and they are conflicting with each other. Follow the [Installation](#) Instructions again and make sure only the one you need is checked.

Q. What do I do if I get the error "Invalid Series ID" and I know it's a valid ID?

A. First, make sure you are connected to the internet. If you are, this error could occur if your firewall is not allowing Excel to communicate with our API. If the add-in is installed on a work computer, talk to your IT group about allowing access to the API. If it is on your personal computer and you don't know much about opening ports, send an email to us and we will try to help you solve it.

Q. What do I do if I get the error "Invalid Data Manipulation"?

A. This issue occurs because you've entered an invalid data manipulation (lin, chg, ch1, etc..) in row 2. Make sure you check row 2 in the column the error appears to make sure you have a correct manipulation that can be used with that series id.

Q. What do I do if I get the error "Cannot disaggregate data"?

A. This issue occurs because you've entered an invalid aggregation (m, w, d, etc..) in row 3. Check row 3 in the column the error appears to make sure they have a correct aggregation that can be used with that series id

Q. What do I do if I get the errors "Compile error in hidden module" or "Could not load an object because it's not available on this machine"?

A. These issues occur because a reference list, which is being used in the add-in code, is missing in your version of Visual Basic or Visual Basic isn't supported in your version. Check to see if Visual Basic exists in your install of Excel by hitting Alt + F11. This will bring up the Visual Basic Editor, if it doesn't come up you may want to check your install of excel. If it did come up, we need to figure out which reference list is missing, send us an email and we will try and help you solve the issue.

FRED FAQs are available at: [research.stlouisfed.org/fred2/help-faq/](https://research.stlouisfed.org/fred2/help-faq/)

### **CONTACT US**

If you have questions about the data in the FRED® database, the Research staff prefers that you send an email to [stlsFRED@stls.frb.org](mailto:stlsFRED@stls.frb.org). If your question necessitates a phone discussion, include your phone number in the message. Staff is available Monday through Friday, 8 a.m. to 4:30 p.m. CST.

Staff will respond to all inquiries within one business day.

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