

# Quick Introduction to FRED

Mike Aguilar | 20Apr2022

FRED @ St. Louis Federal Reserve  
[fred.stlouisfed.org](http://fred.stlouisfed.org)

# Agenda

- Web Tool
- FRED Accounts
- Excel Add In
- R API

# The Web tool

- Finding Data
- Graphing Data
- Transforming Data
- Graphing Multiple Series
- Downloading

## KEY INDICATORS

# At A Glance

Found on home page

AT A GLANCE	POPULAR SERIES	LATEST RELEASES	TOOLS	NEED HELP?
<b>Consumer Price Index for All Urban Consumers: All Items</b> +8.6 % Chg. from Yr. Ago on Mar 2022				<b>U.S. / Euro Foreign Exchange Rate</b> 1.0812 U.S. \$ to 1 Euro on 2022-04-15
<b>Real Gross Domestic Product</b> 6.9 % Chg. from Preceding Period on Q4 2021				<b>Unemployment Rate</b> 3.6 % on Mar 2022
<b>Industrial Production Index</b> +0.9 % Chg. on Mar 2022				<b>All Employees: Total Nonfarm Payrolls</b> +431 Chg., Thous. of Persons on Mar 2022
<b>10-Year Treasury Constant Maturity Rate</b> 2.85 % on 2022-04-18				<b>Initial Claims</b> 185,000 on 2022-04-09

## KEY INDICATORS

# Macro Snapshot

[| FRED | Macro Snapshot \(stlouisfed.org\)](#)

### MACRO SNAPSHOT by the St. Louis Fed

[Home](#) [Key Economic Indicators](#) [Labor Markets](#) [Inflation](#) [GDP Breakdown](#) [Financial Markets](#) [MORE ▾](#)

## KEY ECONOMIC INDICATORS

The five key series the Federal Open Market Committee (FOMC) highlights in its projection materials

[VIEW KEY SERIES](#)

**Real GDP Growth: 6.9%**

*Q4 2021*

**Unemployment Rate: 3.6%**

*March 2022*

**PCE Inflation: 6.4%**

*February 2022*

**Core PCE Inflation: 5.4%**

*February 2022*

**Federal Funds Rate: 0.3%**

*April 18, 2022*



## FINDING DATA ON FRED

# Popular Series

Found on home page

AT A GLANCE   POPULAR SERIES   LATEST RELEASES   TOOLS   NEED HELP?

---

10-Year Treasury Constant Maturity Minus 2-Year Treasury Constant Maturity <small>20 hours ago</small>	Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity <small>20 hours ago</small>
30-Year Fixed Rate Mortgage Average in the United States <small>6 days ago</small>	ICE BofA US High Yield Index Option-Adjusted Spread <small>3 hours ago</small>
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average <small>Apr 12</small>	Unemployment Rate <small>Apr 1</small>
Federal Funds Effective Rate <small>Apr 1</small>	Gross Domestic Product <small>Mar 30</small>
10-Year Breakeven Inflation Rate <small>20 hours ago</small>	Real Gross Domestic Product <small>Mar 30</small>

[More Popular Series](#)

## FINDING DATA ON FRED

# Search by Concept, Category, or Release

Found on home page



Trending Search Terms:



Browse Data By:

[Category](#) [Release](#) [Source](#) [Tag](#)  
[Release Calendar](#)

## FINDING DATA ON FRED

# Release Calendar

[Economic Release Calendar | FRED | St. Louis Fed \(stlouisfed.org\)](#)

Release Calendar

All Releases

week month year

< > today

Apr 17 — 23 2022

Sun 4/17	Mon 4/18	Tue 4/19	Wed 4/20	Thu 4/21	Fri 4/22	Sat 4/23
2 releases	33 releases	31 releases	35 releases	38 releases	29 releases	2 releases

Sort By: Date | Name

Wednesday April 20, 2022		Updated
4:00 am	National Accounts - GDP (Eurostat)	✓
7:00 am	SOFR Averages and Index Data	✓
	Secured Overnight Financing Rate Data	✓
7:30 am	Chicago Fed National Financial Conditions Index	✓
8:00 am	Federal Funds Data	✓

## GRAPHING DATA- UNDERSTANDING THE GRAPH



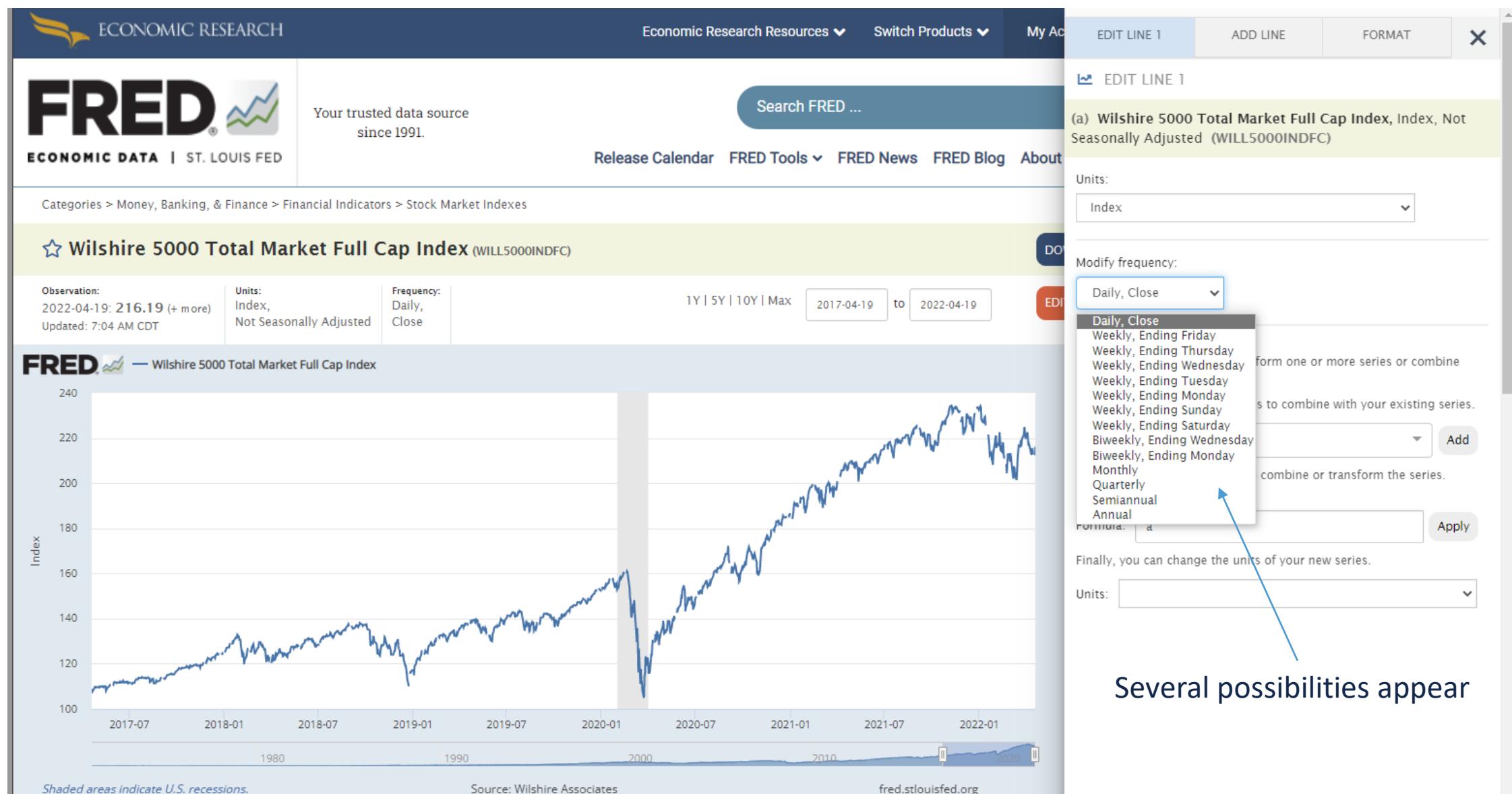
## GRAPHING DATA – TIME FRAME



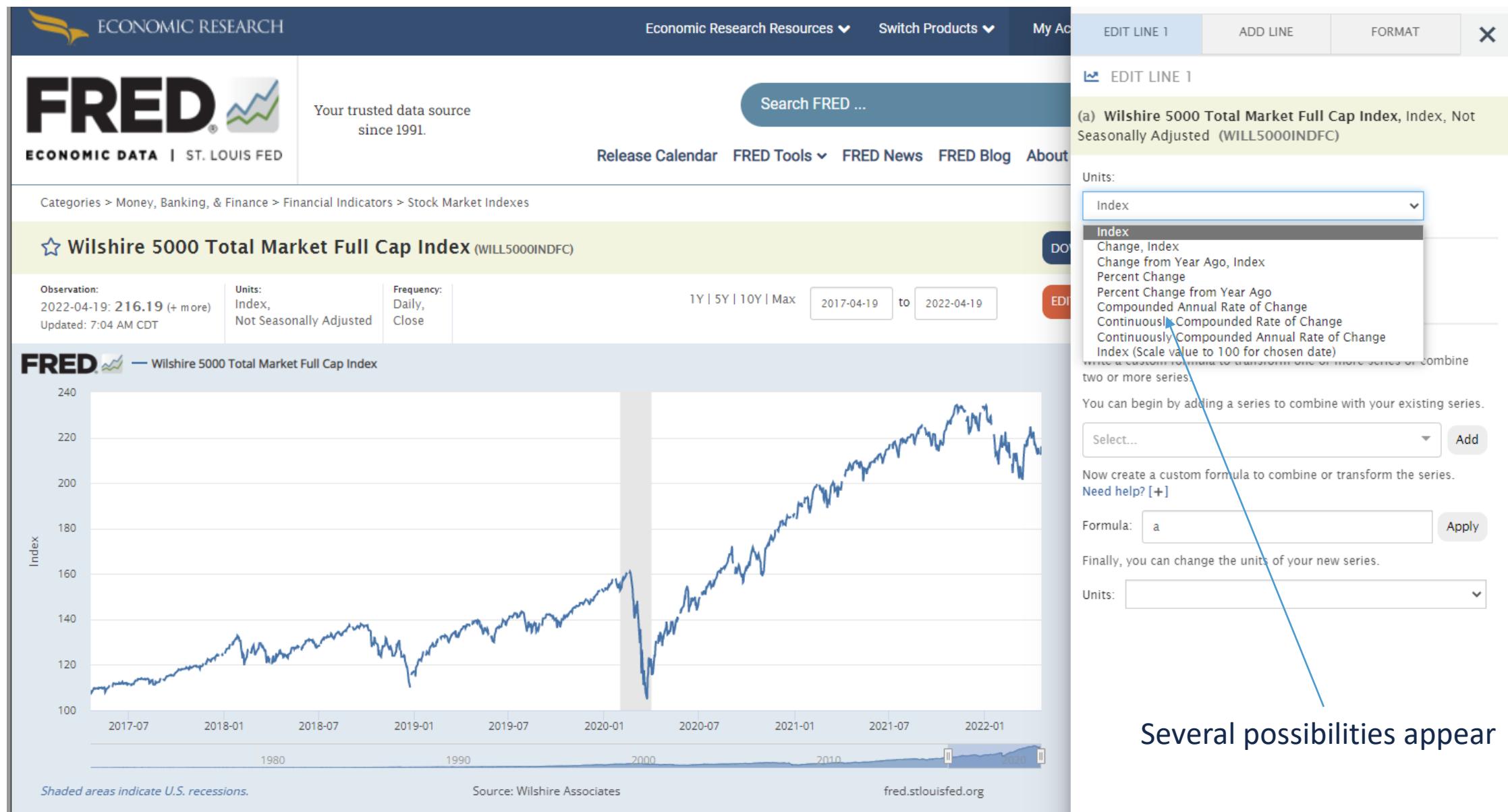
## GRAPHING DATA – CHANGE FREQUENCY



# GRAPHING DATA – CHANGE FREQUENCY



## GRAPHING DATA – ALTER UNITS



## GRAPHING DATA – ALTER SCALE

### Wilshire 5000 Total Market Full Cap Index (WILL5000INDFC)

[DOWNLOAD !\[\]\(869f8db8cb6058a4d20fc99f4521bf06\_img.jpg\)](#)

Observation:  
2022-04-20: 215.73 (+ more)  
Updated: 7:03 AM CDT

Units:  
Index,  
Not Seasonally Adjusted

Frequency:  
Daily,  
Close

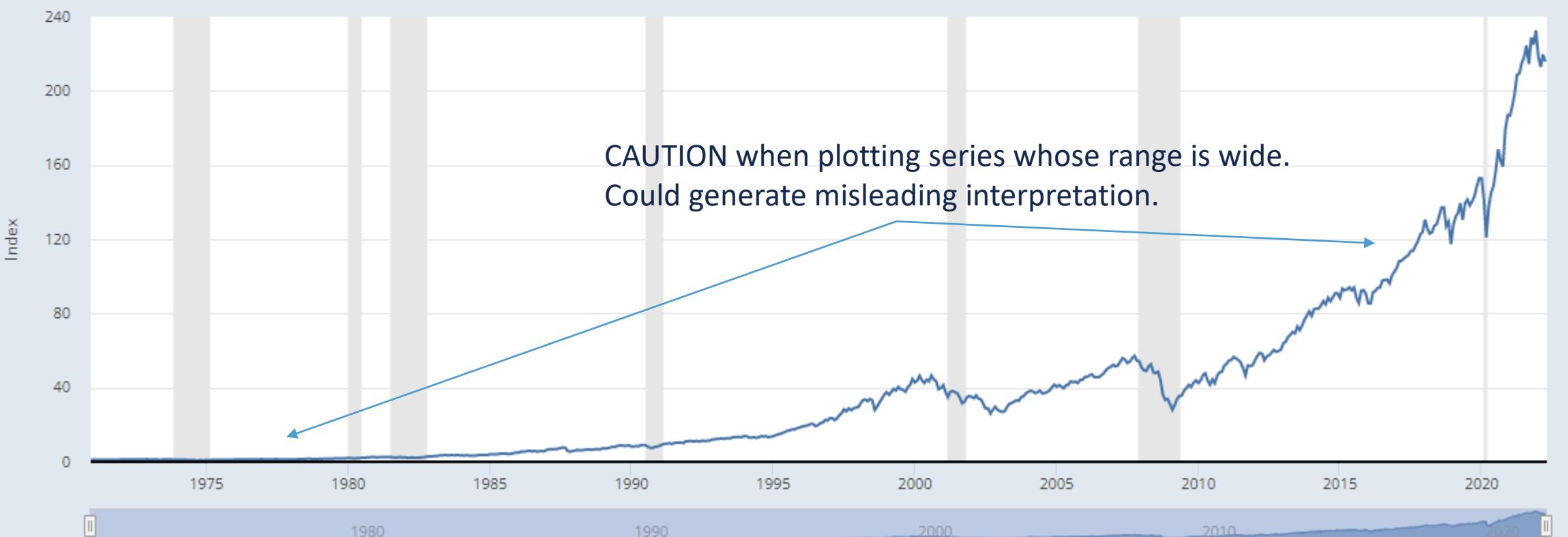
1Y | 5Y | 10Y | Max

1970-12-31

to 2022-04-20

[EDIT GRAPH !\[\]\(1a0ecb0f44016aa353f6ecdd79a3699d\_img.jpg\)](#)

**FRED**  — Wilshire 5000 Total Market Full Cap Index



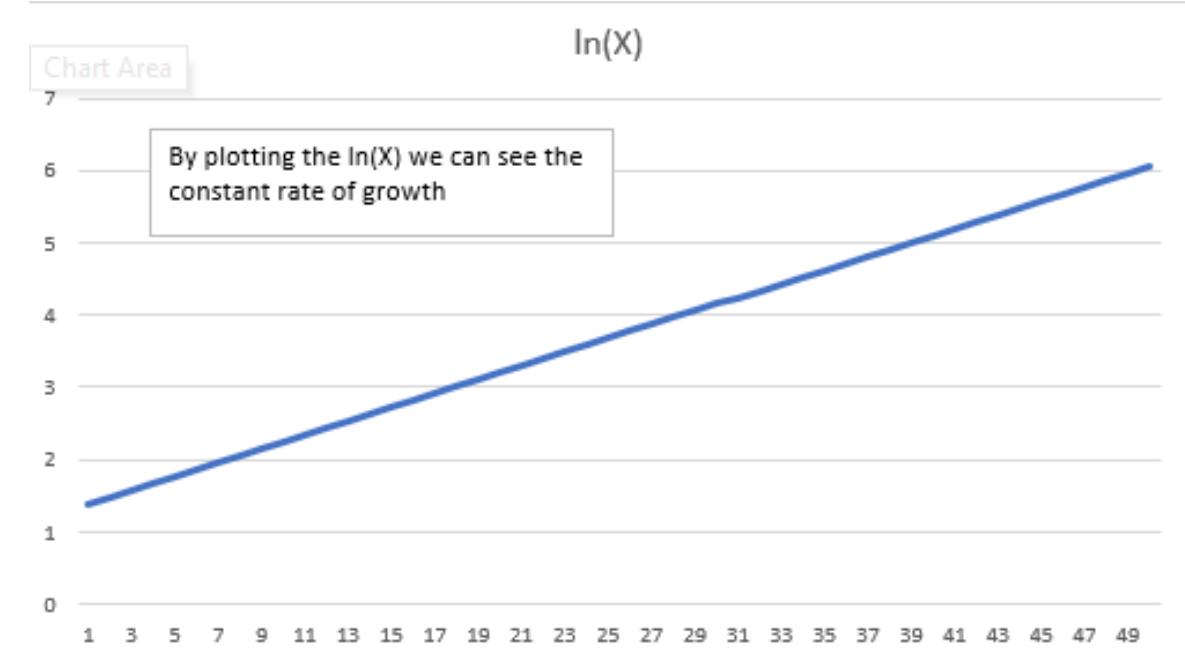
Shaded areas indicate U.S. recessions.

Source: Wilshire Associates

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## GRAPHING DATA – ALTER SCALE



## GRAPHING DATA – ALTER SCALE

### Wilshire 5000 Total Market Full Cap Index (WILL5000INDFC)

[DOWNLOAD !\[\]\(7377a3302f3d0fb3a834bf90f4594228\_img.jpg\)](#)

Observation:  
2022-04-20: 215.73 (+ more)  
Updated: 7:03 AM CDT

Units:  
Index,  
Not Seasonally Adjusted

Frequency:  
Daily,  
Close

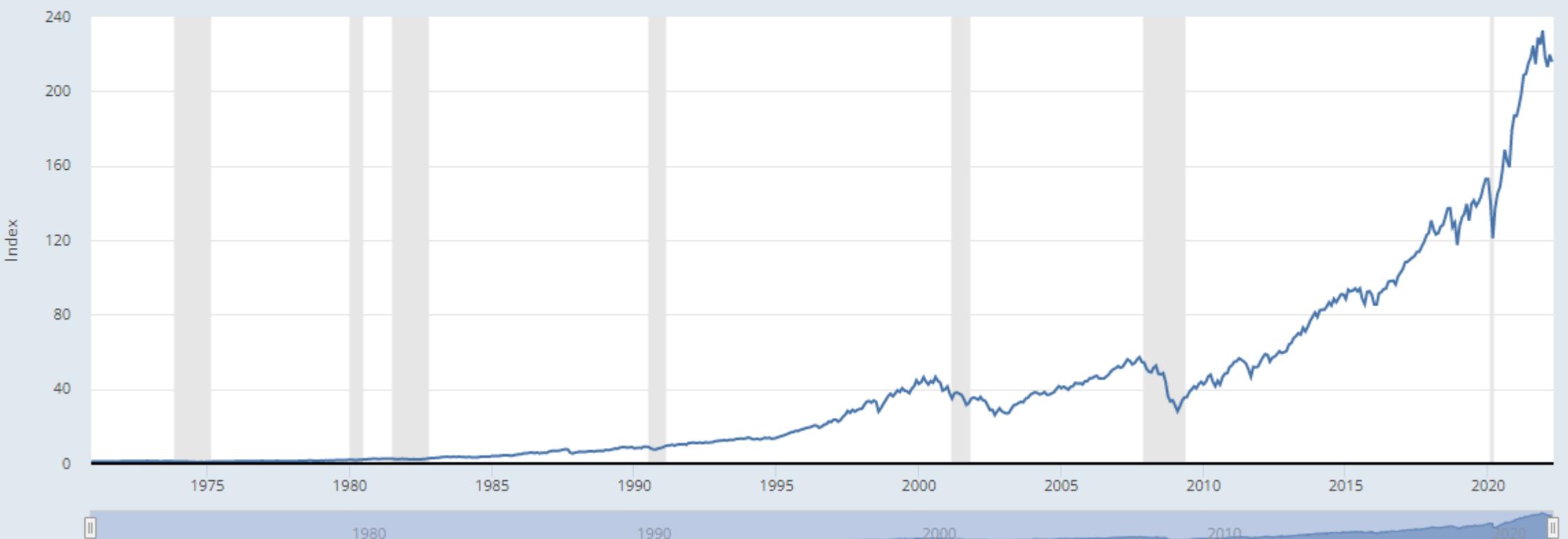
1Y | 5Y | 10Y | Max

1970-12-31

to 2022-04-20

[EDIT GRAPH !\[\]\(9f63f5ec98cc2eddf66038fdc55c1091\_img.jpg\)](#)

**FRED**  — Wilshire 5000 Total Market Full Cap Index



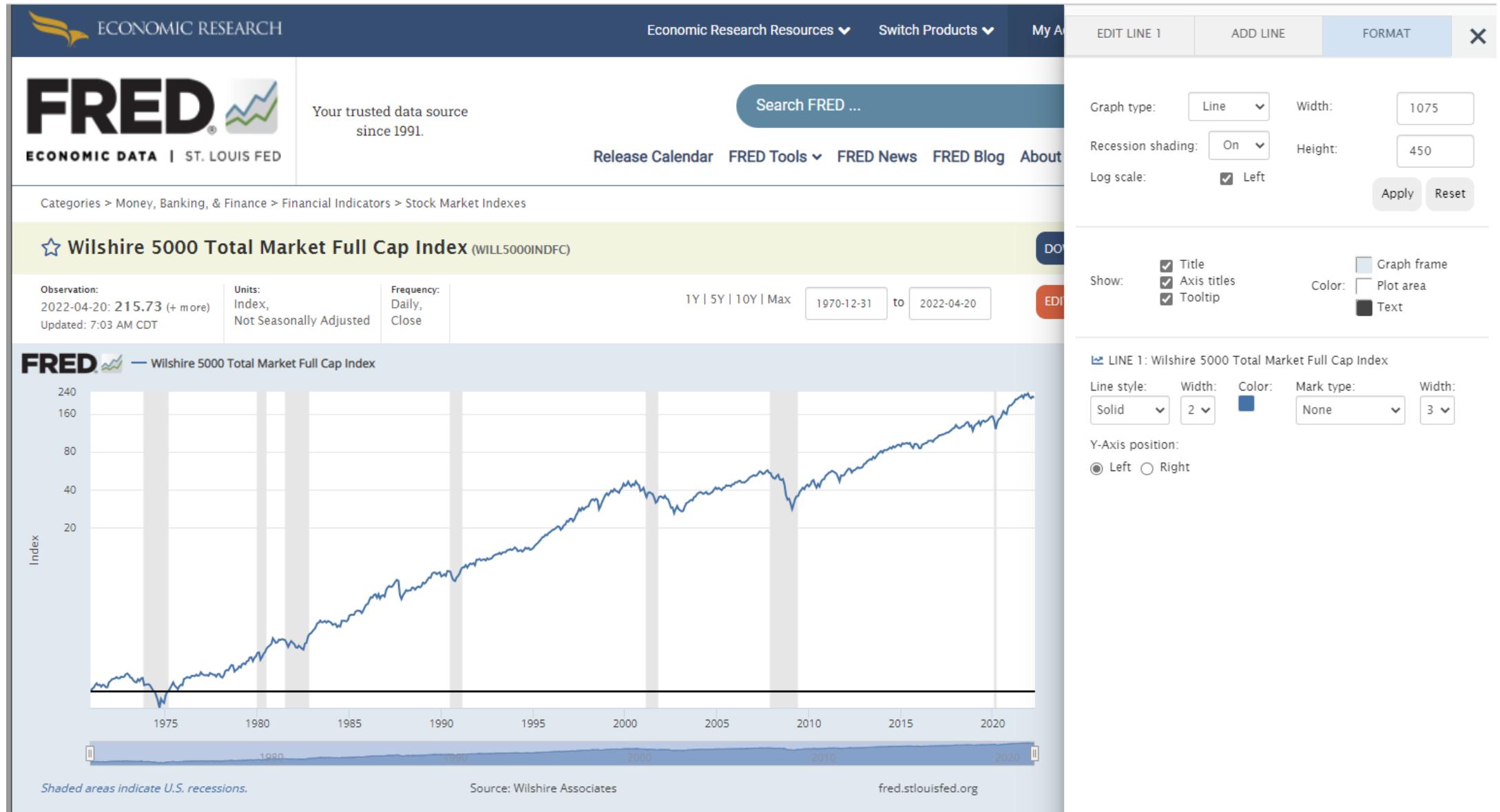
Shaded areas indicate U.S. recessions.

Source: Wilshire Associates

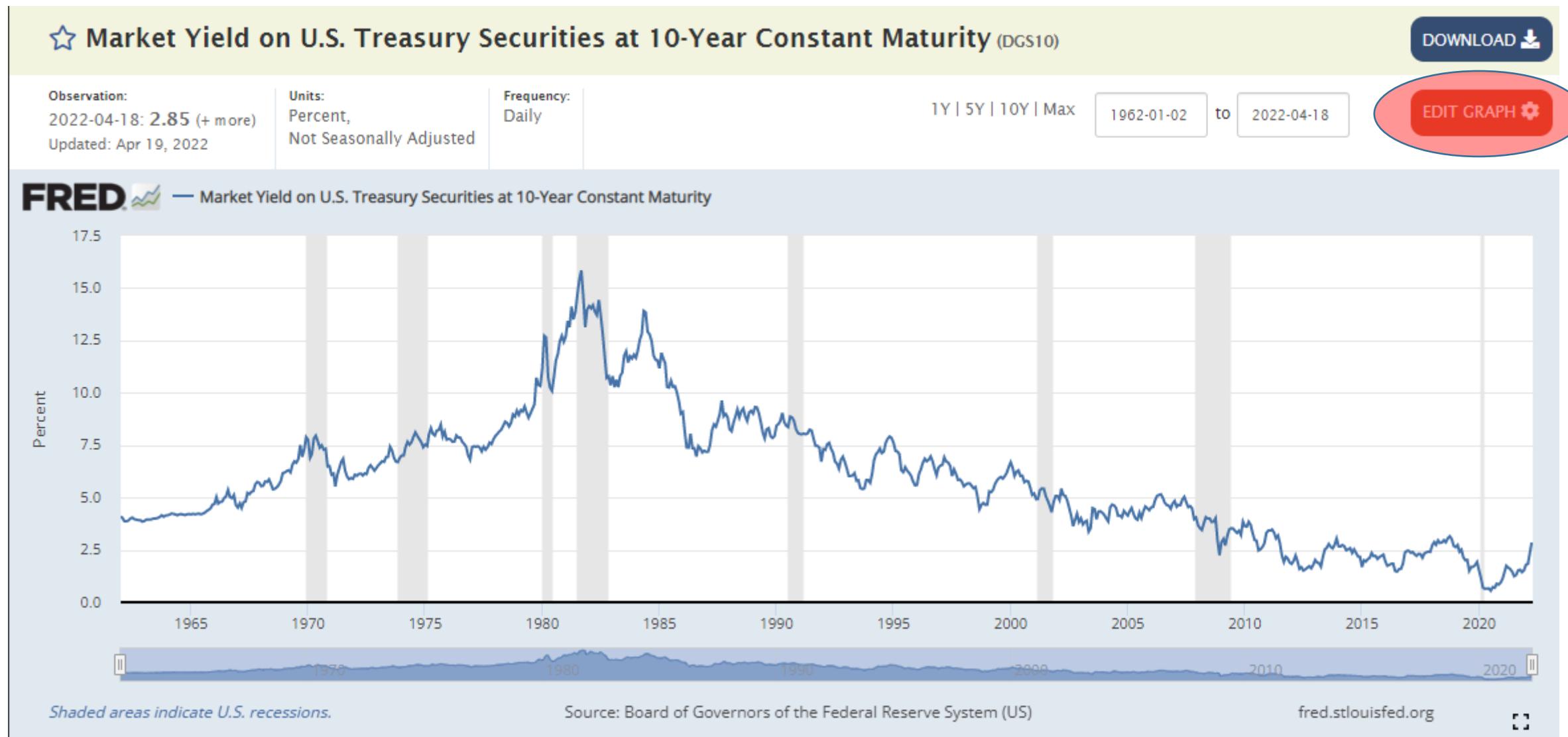
fred.stlouisfed.org



## GRAPHING DATA – ALTER SCALE



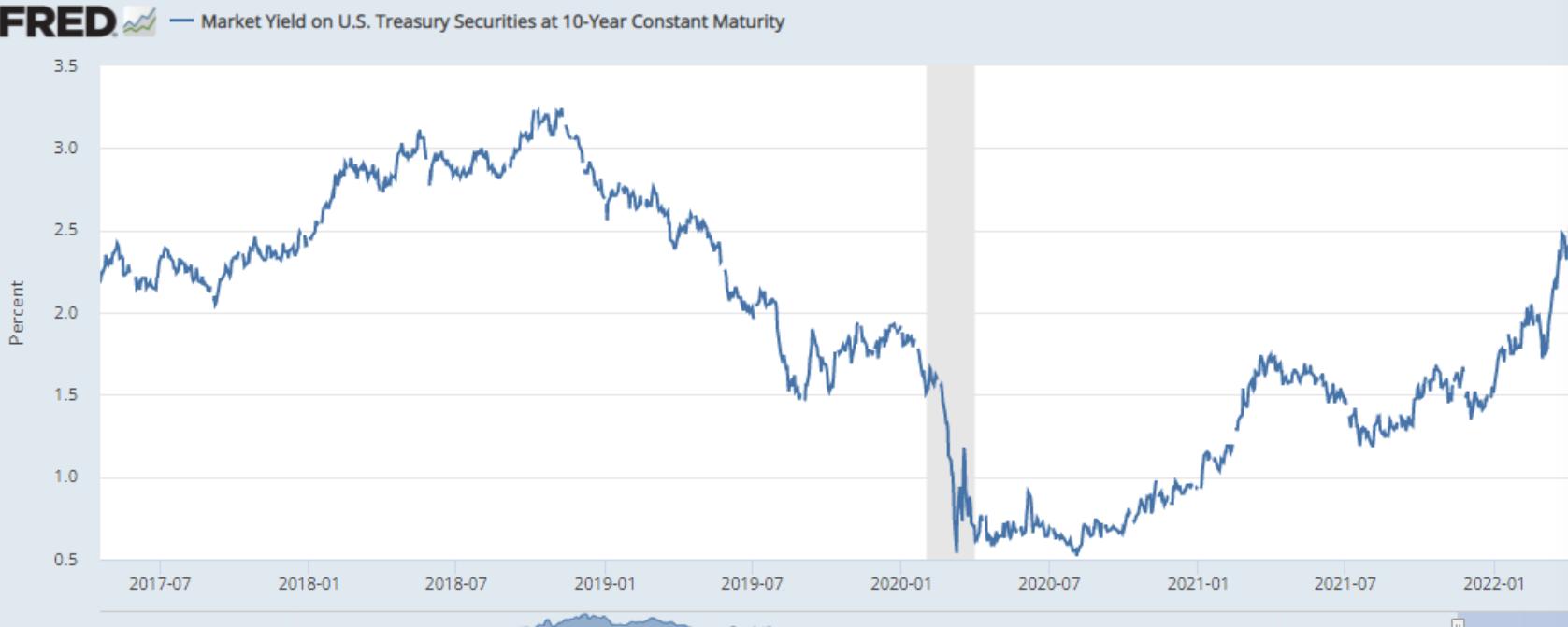
## GRAPHING DATA – FORMULAS



## GRAPHING DATA – FORMULAS

### Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity (DGS10)

FRED



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

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Share Links

Account Tools



### NOTES

Type a-b and click Apply

Source: Board of Governors of the Federal Reserve System (US)

Release: H.15 Selected Interest Rates

Units: Percent, Not Seasonally Adjusted

DGS10  
(a) Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity, Percent, Not Seasonally Adjusted (DGS10)



EDIT

Units:

Percent



Copy to all

(b) Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity, Percent, Not Seasonally Adjusted (DGS2)



Units:

Percent



Copy to all

Modify frequency:

Daily



Customize data:

Write a custom formula to transform one or more series or combine two or more series.

You can begin by adding a series to combine with your existing series.

Select...



Add

Now create a custom formula to combine or transform the series.

Need help? [+]

Formula: a-b

Apply

Finally, you can change the units of your new series.

Units:



## GRAPHING DATA – FORMULAS

Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity-Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity

DOWNLOAD 

1Y | 5Y | 10Y | Max

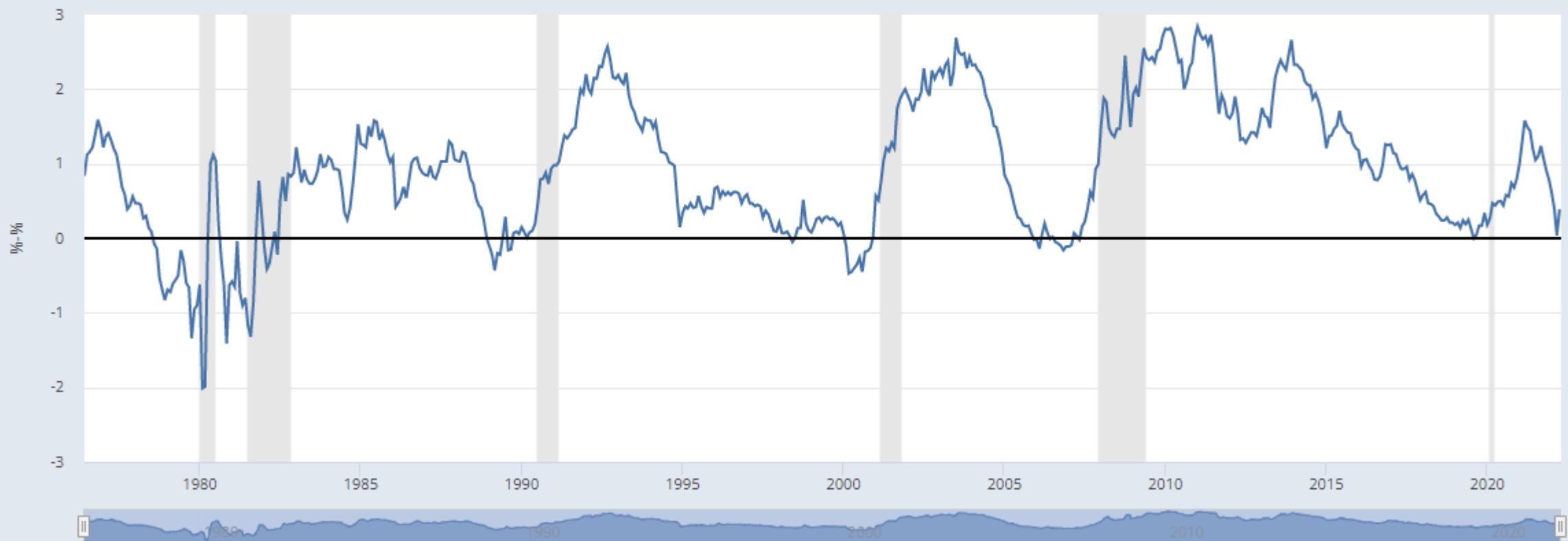
1976-05-31

to 2022-04-18

EDIT GRAPH 



— Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity-Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

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## GRAPHING DATA – OVERLAY SERIES

Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity-Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity

DOWNLOAD 

1Y | 5Y | 10Y | Max

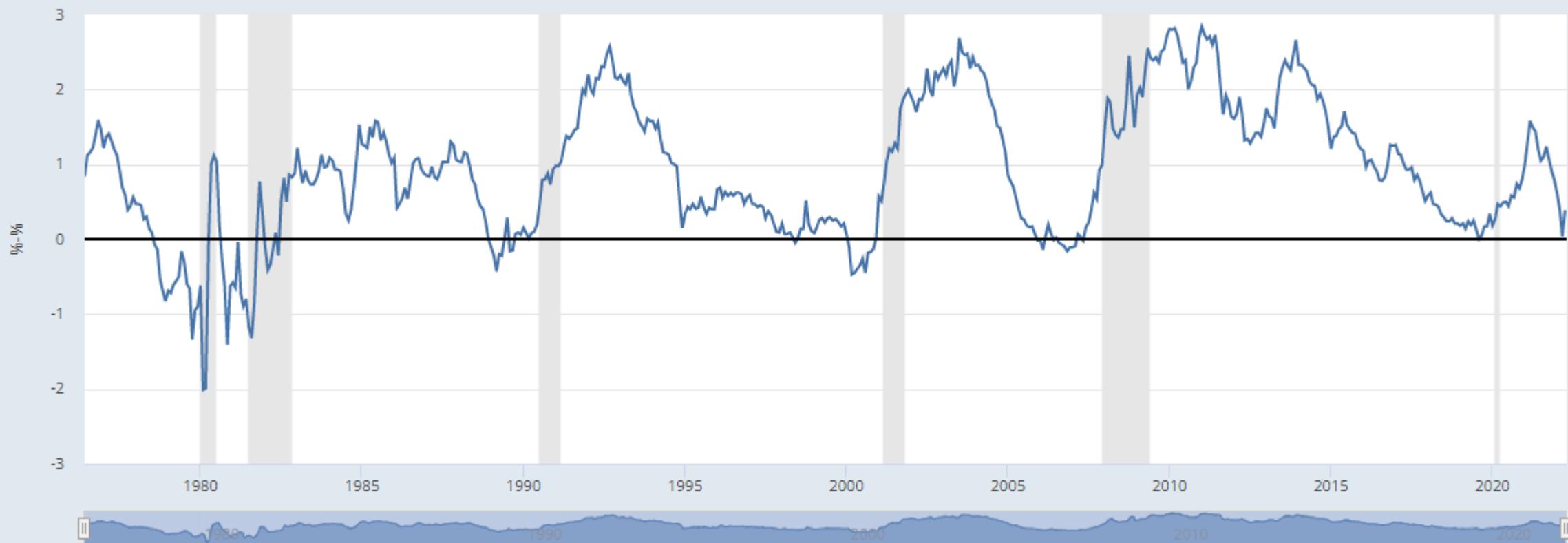
1976-05-31

to 2022-04-18

EDIT GRAPH 



— Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity-Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

fred.stlouisfed.org

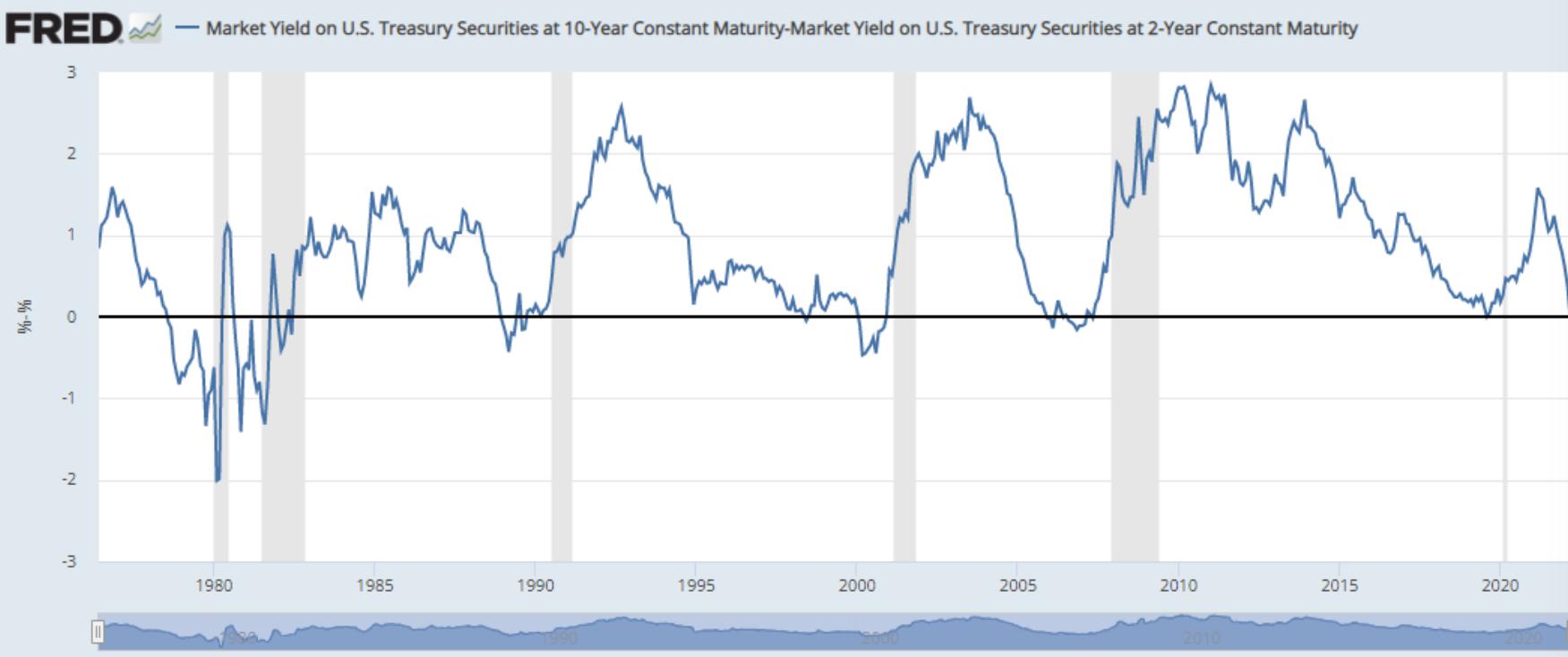


## GRAPHING DATA – OVERLAY SERIES

Categories > Money, Banking, & Finance > Interest Rates > Treasury Constant Maturity

### Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity-Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity

1Y | 5Y | 10Y | Max      1976-05-31 to 2022-04-18



Add data series to graph:

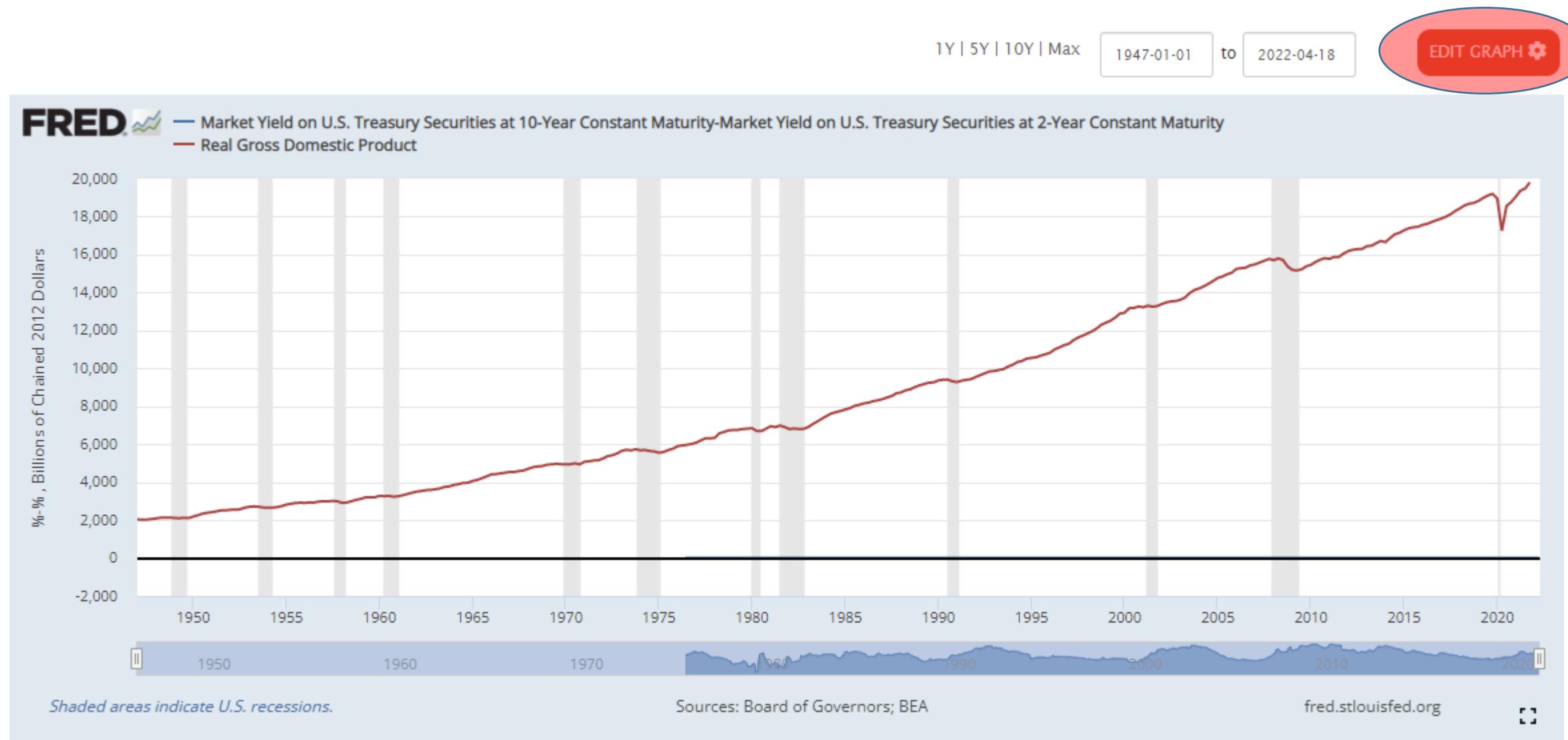
Real Gross Domestic Product

Add data series

Create user-defined line? [+]

Type Real GDP and click  
Add data series

## GRAPHING DATA – OVERLAY SERIES



## GRAPHING DATA – OVERLAY SERIES



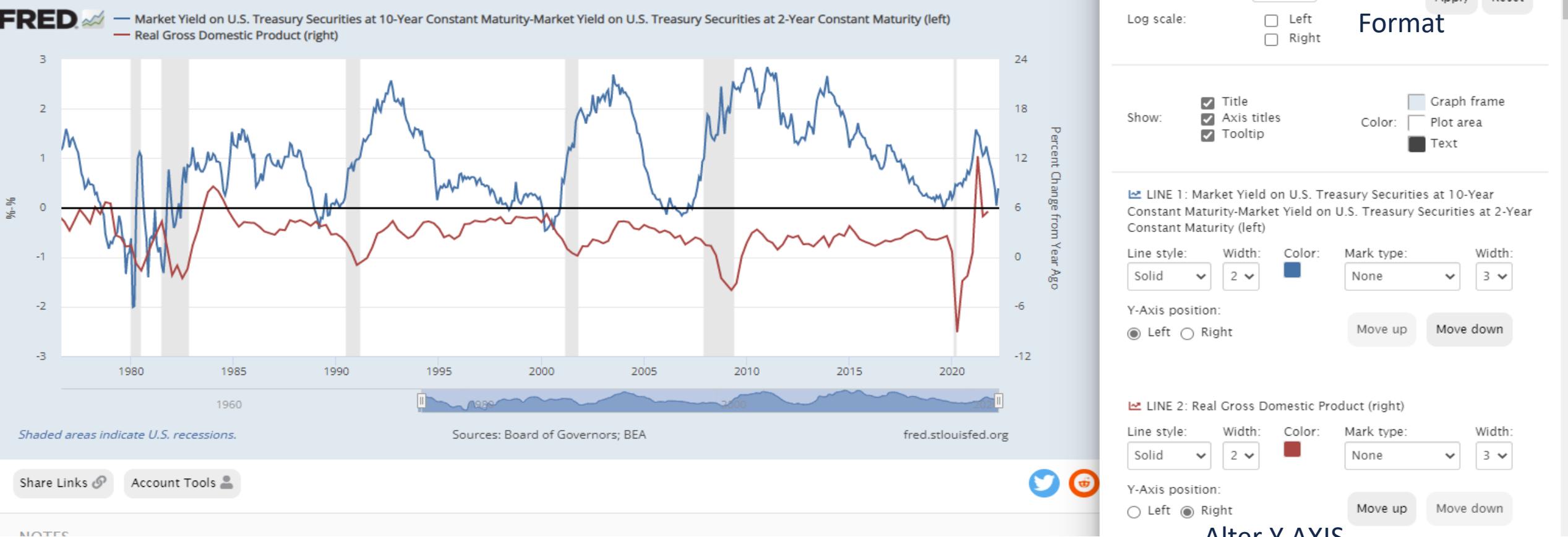
# GRAPHING DATA – OVERLAY SERIES

ECONOMIC DATA | ST. LOUIS FED

Release Calendar FRED Tools ▾ FRED News FRED Blog About

Categories > Money, Banking, & Finance > Interest Rates > Treasury Constant Maturity

## FRED Graph



# GRAPHING DATA – OVERLAY SERIES



## GRAPHING DATA – OVERLAY SERIES



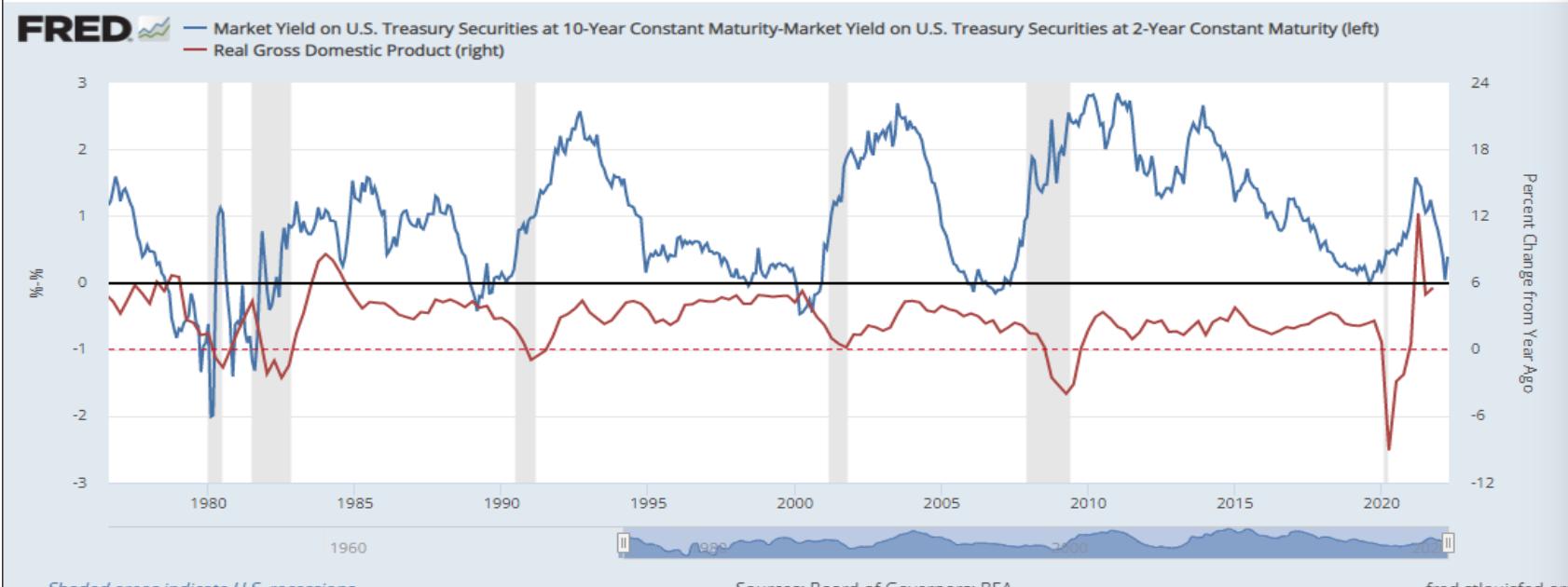
# GRAPHING DATA – OVERLAY SERIES

ECONOMIC DATA | ST. LOUIS FED

Release Calendar FRED Tools ▾ FRED News FRED Blog About

Categories > Money, Banking, & Finance > Interest Rates > Treasury Constant Maturity

## FRED Graph



Share Links Account Tools

## NOTES

Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity (DGS10)

Source: Board of Governors of the Federal Reserve System (US)

Release: H.15 Selected Interest Rates

Units: Percent, Not Seasonally Adjusted

**EDIT LINES** 3 ADD LINE FORMAT

Stacking: None Height: 450

Recession shading: On

Log scale: Left Right

Show: Title Axis titles Tooltip

Color: Graph frame Plot area Text

LINE 1: Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity-Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity (left)

Line style: Solid Width: 2 Color: Blue Mark type: None Width: 3

Y-Axis position: Left Right Move up Move down

LINE 2: Real Gross Domestic Product (right)

Line style: Solid Width: 2 Color: Red Mark type: None Width: 3

Y-Axis position: Left Right Move up Move down

LINE 3: User-defined Line

Line style: Dash Width: 1 Color: Red Mark type: Diamond Width: 1

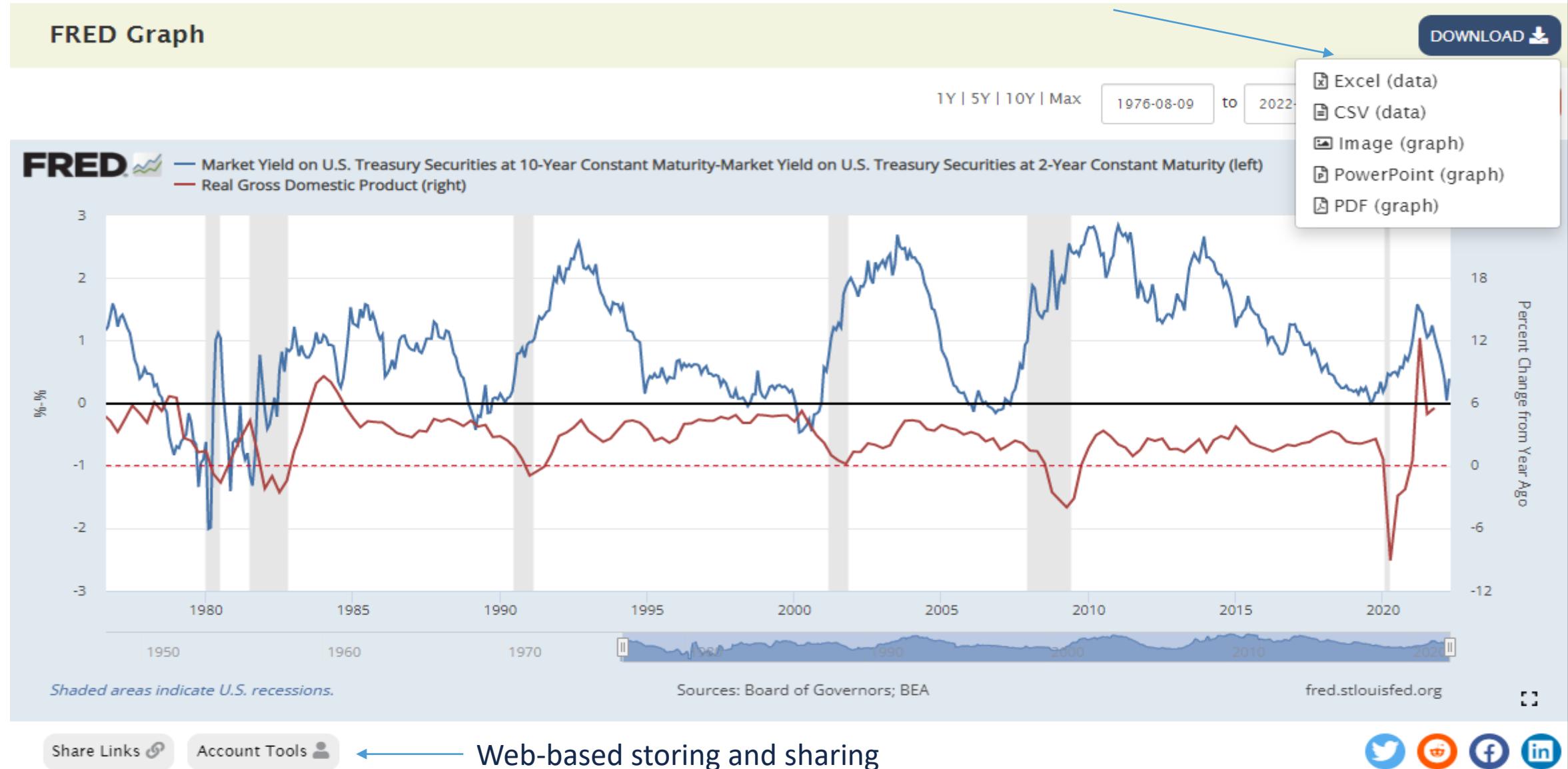
Y-Axis position: Left Right

Change axis and format

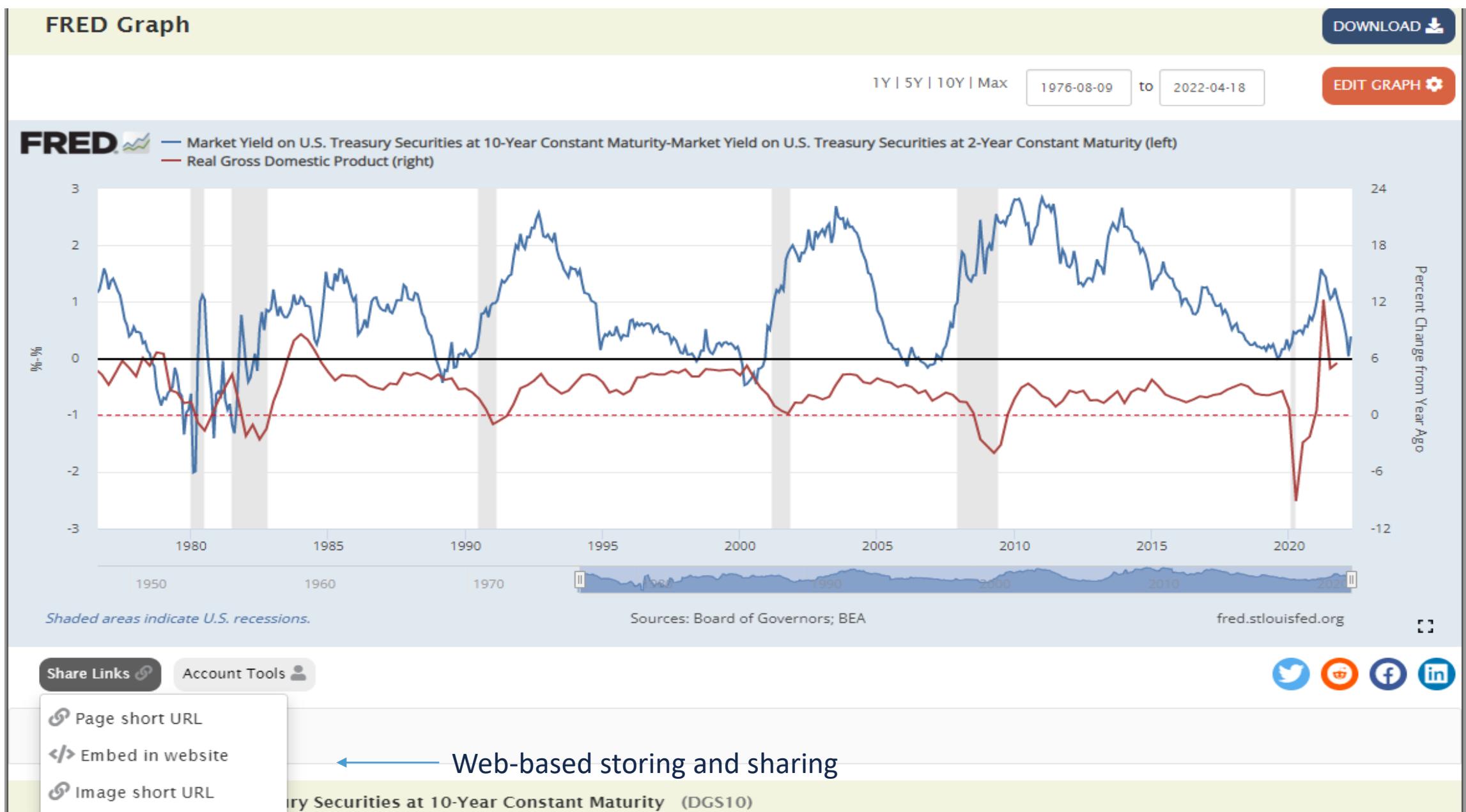
## DOWNLOADING DATA

Categories > Money, Banking, & Finance > Interest Rates > Treasury Constant Maturity

### Local Downloads



## DOWNLOADING DATA



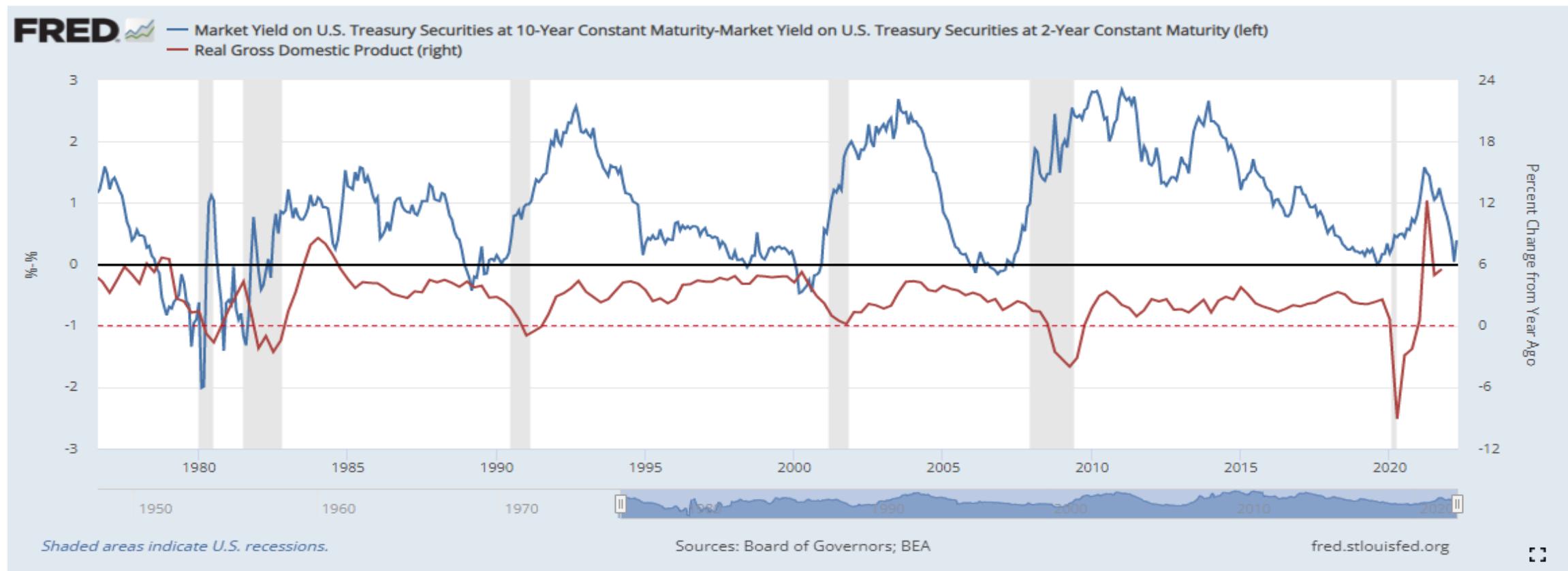
## DOWNLOADING DATA

1Y | 5Y | 10Y | Max

1976-08-09

to 2022-04-18

EDIT GRAPH



Share Links

Account Tools

Save graph

Add to Dashboard

Add to data list

Get email notification

Web-based storing and sharing

NOTES

Market Yield o

10-Year Constant Maturity (DGS10)



# Agenda

- Web Tool
- FRED Accounts
- Excel Add In
- R API

# FRED Account tools

- Data Lists
- Dashboards

## CREATE AN ACCOUNT

The screenshot shows the FRED website's login modal. The modal has a white background and a dark blue header bar at the top. The header bar contains the text "ECONOMIC RESEARCH" on the left, "Economic Research Resources" with a dropdown arrow in the center, "Switch Products" with a dropdown arrow on the right, and "My Account" with a dropdown arrow on the far right. Below the header, the modal has two tabs: "Sign In" (which is selected) and "Create New Account". A close button ("X") is located in the top right corner of the modal. The "Sign In" section contains a "Login with Google" button with the Google logo. Below it is a horizontal line with the word "OR" in the center. Underneath "OR" are two input fields: one for "Email Address" with an envelope icon and one for "Password" with a lock icon. Below these fields is a checkbox labeled "Remember Me". At the bottom of the modal is a blue "Sign In" button.

ECONOMIC RESEARCH

Economic Research Resources ▾

Switch Products ▾ My Account ▾

Sign In Create New Account

X

Login with Google

OR

Email Address

Password

Remember Me

Forgot your password?

Sign In

Already have an account?

Sign In  
Forgot your password?

Want to create a new account?

Register

Why Register?

- Subscribe to email updates for economic data series.

## EXPLORE ACCOUNT FEATURES

The screenshot shows the FRED (Federal Reserve Economic Data) website interface. At the top, there's a dark blue header bar with the "ECONOMIC RESEARCH" logo on the left, followed by "Economic Research Resources", "Switch Products", and "My Account". A search bar labeled "Search FRED ..." is positioned above a navigation menu. The main content area features the "FRED" logo and a sub-headline "Your trusted data source since 1991". Below this are links for "Release Calendar", "FRED Tools", and "FRED Now". On the left side, there are sections for users who already have an account ("Sign In", "Forgot your password?", "Register"), those who want to create a new account ("Want to create a new account?", "Register"), and a "Why Register?" section with a bulleted list. A large white sidebar on the right is titled "Search My Content" and lists various account features with corresponding icons: My Content, Dashboards (3), Graphs (115), Data Lists (3), Maps, Notifications, API Keys, Settings, and Sign out.

ECONOMIC RESEARCH

Economic Research Resources ▾ Switch Products ▾ My Account ▾

**FRED**   
ECONOMIC DATA | ST. LOUIS FED

Your trusted data source since 1991.

Search FRED ...

Release Calendar FRED Tools ▾ FRED Now

Already have an account?

[Sign In](#)  
[Forgot your password?](#)

Want to create a new account?

[Register](#)

Why Register?

- Subscribe to email updates for economic data series.
- Create personalized lists of economic data series.
- Save customized graphs and maps for later use.
- Build and share personalized dashboards with series that interest you.

Search My Content

My Content

Dashboards 3

Graphs 115

Data Lists 3

Maps

Notifications

API Keys

Settings

Sign out

## DATA LIST

The screenshot shows the FRED Data List interface. At the top, there's a dark blue header bar with the "ECONOMIC RESEARCH" logo on the left, followed by "Economic Research Resources", "Switch Products", and "My Account". A search bar labeled "Search FRED ..." is positioned above a navigation menu. The menu includes links for "Release Calendar", "FRED Tools", and "FRED No". On the right side of the menu, there's a red oval highlighting the "Data Lists" link, which has a small "3" notification badge above it. Other menu items include "Graphs" (with 115 notifications), "Maps", "Notifications", "API Keys", "Settings", and "Sign out". Below the header, there's a section for existing users with "Already have an account?" and links for "Sign In" and "Forgot your password?". There's also a section for new users with "Want to create a new account?" and a "Register" link. At the bottom, there's a "Why Register?" section with a bulleted list of benefits.

ECONOMIC RESEARCH

Economic Research Resources ▾ Switch Products ▾ My Account ▾

**FRED**   
ECONOMIC DATA | ST. LOUIS FED

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Search FRED ...

Release Calendar FRED Tools ▾ FRED No

Graphs 115

Data Lists 3

Maps

Notifications

API Keys

Settings

Sign out

Already have an account?

[Sign In](#)

[Forgot your password?](#)

Want to create a new account?

[Register](#)

Why Register?

- Subscribe to email updates for economic data series.
- Create personalized lists of economic data series.
- Save customized graphs and maps for later use.
- Build and share personalized dashboards with series that interest you.

# DATA LIST



ECONOMIC DATA | ST. LOUIS FED

Your trusted data source  
since 1991.

Search FRED ...



Release Calendar FRED Tools ▾ FRED News FRED Blog About FRED ▾

All Content

Dashboards

Data Lists

Graphs

Maps

Recent

Favorites

Notifications

Published Data Lists

API Keys

Settings

+ Add New ▾

Preview Graphs

Category

Dashboard

Data List

Graph

✓ Name ↑

filter content

Modified

Labor Market

13 minutes ago

Real Estate by State

one month ago

# DATA LIST



ECONOMIC DATA | ST. LOUIS FED

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since 1991.

Search FRED ...



Release Calendar FRED Tools ▾ FRED News FRED Blog About FRED ▾

All Content

Dashboards

Data Lists

Graphs

Maps

Recent

Favorites

Notifications

Published Data Lists

API Keys

Settings

+ Add New ▾

Preview Graphs

Category

Dashboard

Data List

Graph

✓ Name ↑

filter content

Modified

Labor M

Real Est

## Create New Data List

Name

Treasuries

Create

Content

## DATA LIST

ECONOMIC RESEARCH

Economic Research Resources ▾ Switch Products ▾ My Account ▾

# FRED



YOUR TRUSTED DATA SOURCE SINCE 1991

Search FRED ...

Release Calendar FRED Tools ▾ FRED News FRED Blog About FRED ▾

All Content

+ Add New ▾ Preview Graphs

Content

filter content

Name	Modified
Labor Market	14 minutes ago
Real Estate by State	one month ago
Treasuries	

Recent

Favorites

Notifications

Published Data Lists

API Keys

## DATA LIST

### Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity (DGS10)

[DOWNLOAD !\[\]\(293f4569e31ce2e23409a7428c7d661c\_img.jpg\)](#)

Observation:  
2022-04-19: 2.93 (+ more)  
Updated: 3:18 PM CDT

Units:  
Percent,  
Not Seasonally Adjusted

Frequency:  
Daily

1Y | 5Y | 10Y | Max

2017-04-19

to 2022-04-19

[EDIT GRAPH !\[\]\(0a0b609dcde5224e7480a4f51bb76cda\_img.jpg\)](#)**FRED** 

— Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

fred.stlouisfed.org

[Share Links !\[\]\(59e4e94ef536f221d5c47f9cdea485d8\_img.jpg\)](#)[Account Tools !\[\]\(73dc35a3913bfbff46c8d14ee8be6ab9\_img.jpg\)](#)

#### NOTES

[!\[\]\(3e638c6a3e8310f4dab8709fa911c410\_img.jpg\) Save graph](#)[!\[\]\(896ba5a3aa577c6861f251b8fd94b6cf\_img.jpg\) Add to Dashboard](#)

Source: Board of  Add to data list

Units: Percent,  Get email notification

Frequency: Daily

System (US) 

Release: H.15 Selected Interest Rates 

## DATA LIST

### Add to My Data List

#### Select Data List:

Treasuries, 1 series in list ▾

Would you like to add a new data list?

#### Vintage Dates (Optional):

If no vintage dates are selected or entered, the most recent revision of data for series will be retrieved. If vintages dates are selected or entered, the data for series that actually existed on those **PAST DATES** will be retrieved. See ALFRED for more information about vintage data.

#### Tips on selecting & entering vintage dates:

To select vintage dates, use the 'Ctrl' key with the mouse pointer to select and deselect multiple vintage dates. Use the 'Shift' key with the mouse pointer to select the first and last vintage dates in a range. To enter vintage dates, use date format YYYY-MM-DD (e.g. 2005-12-31) and enter one per line.

#### Select Series:

<input checked="" type="checkbox"/>	<b>Series</b>	<b>Units</b> <i>(Description of growth rate formulas)</i>	<i>(Optional)</i> <b>Vintage Dates</b> <b>When Data Were Revised</b>	<i>(Optional)</i> <b>Enter Vintage Dates</b>
<input checked="" type="checkbox"/>	DGS2, Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity, Daily, Not Seasonally Adjusted	Select: All, None Levels Change Change from Year Ago Percent Change Percent Change from Year Ago	Select: All, None 2014-04-02 ↑ 2014-04-03 █ 2014-04-04 2014-04-07 2014-04-08 ↓	One per line

Add Series to My Data List

## DATA LIST

### ★ Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity (DGS2)

[DOWNLOAD !\[\]\(081c33931122b4c6b164b34c75fc75c4\_img.jpg\)](#)

Observation:  
2022-04-19: 2.61 (+ more)  
Updated: 3:19 PM CDT

Units:  
Percent,  
Not Seasonally Adjusted

Frequency:  
Daily

[1Y | 5Y | 10Y | Max](#)

2017-04-19

to 2022-04-19

[EDIT GRAPH !\[\]\(f98cd12c867353ebaaded7ce381da3e1\_img.jpg\)](#)**FRED** 

Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

[fred.stlouisfed.org](http://fred.stlouisfed.org)

[Share Links !\[\]\(c824d564d2d5d2752eef72d91a8e177a\_img.jpg\)](#)[Account Tools !\[\]\(d89ac07a658a417454d2e0ed23cb8e35\_img.jpg\)](#)

#### NOTES

[!\[\]\(e3192b7cef540ee4b246a47529320f3d\_img.jpg\) Save graph](#)[!\[\]\(3a6d4b34857e8883c24b25562782fe9e\_img.jpg\) Add to Dashboard](#)

Source: Board of

[!\[\]\(8c5e222ca2ae933ae5c19ba72450e9ea\_img.jpg\) Add to data list](#)

Units: Percent, Not Seasonally Adjusted

[!\[\]\(719c2b39db1eb3007d48c5224231ba92\_img.jpg\) Get email notification](#)

System (US) 

Release: H.15 Selected Interest Rates 

## DATA LIST

### Data List - Treasuries



#### Add data series

To add data series, return to FRED® for current data or ALFRED® for vintage data. Go to a category, release, or search page then select the checkboxes next to series and click on the 'Add to My Data List' button (e.g., the GDP category, release, or search pages). Also, you can go to a series page and click the Each 'Account Tools' button under the graph then click 'Add to data list'. (e.g., the GDP series page).

Sort by:

Series 1 - 2 of 2

#### Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity

Percent, Daily, Not Seasonally Adjusted, Vintage: Current 1962-01-02 to 2022-04-19 (2022-04-20)



#### Market Yield on U.S. Treasury Securities at 2-Year Constant Maturity

Percent, Daily, Not Seasonally Adjusted, Vintage: Current 1976-06-01 to 2022-04-19 (2022-04-20)



# DASHBOARD

ECONOMIC RESEARCH

Economic Research Resources ▾ Switch Products ▾ My Account ▾

**FRED**   
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Your trusted data source since 1991.

Search FRED ...

Release Calendar FRED Tools ▾ FRED N...

All Content + Add New ▾ Preview Graphs

Content

✓ Name ↑

Name	Created
Corporate Profits & Investment	2 weeks ago
Labor Market by Mike Aguilar	2 weeks ago
Real Estate	one month ago

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Dashboards 3

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Data Lists 3

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# DASHBOARD

ECONOMIC RESEARCH

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# FRED

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- + Add New ▾
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filter content

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Notifications

Published Data Lists

API Keys

Settings

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Modified Economic Research Resources ▾

Create New Dashboard

Name

Treasuries

Create

The screenshot shows the FRED dashboard interface. On the left, there's a sidebar with links like 'All Content', 'Dashboards' (which is highlighted), 'Data Lists', 'Graphs', 'Maps', 'Recent', 'Favorites', 'Notifications', 'Published Data Lists', 'API Keys', and 'Settings'. The main area has a search bar at the top right. Below it are navigation links: 'Release Calendar', 'FRED Tools', 'FRED News', 'FRED Blog', and 'About FRED'. A 'Category' dropdown menu is open, showing options: '+ Add New ▾', 'Dashboard' (which is highlighted and circled in red), 'Category', 'Data List', and 'Graph'. To the right of this menu is a 'filter content' input field. At the bottom, a modal window titled 'Create New Dashboard' is open, with a 'Name' field containing 'Treasuries' and a 'Create' button (also circled in red).

# DASHBOARD

ECONOMIC RESEARCH

# FRED

ECONOMIC DATA | ST. LOUIS FED

## Treasuries

+ Add Widget Actions ▾

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- ALFRED®
- GeoFRED®
- FRASER®
- IDEAS

RESEARCH

- Eighth District
- Working Papers
- Events
- Publications
- Other Research

OUR SITES

- St. Louis Fed
- Federal Reserve System
- Research Division
- Education Resources

Economic Research Resources ▾

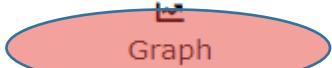
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Search

### Add Widget

 Graph  
Chart data series from our FRED database.

 Data Table  
Display time series data in a tabular format.

 Single Value  
Highlight a series' current value or on a specific date.

 Data List  
Include a FRED data list as a reference to a collection of series.

 Notes  
Annotate your widgets by placing a note nearby.

 Spacer  
Add a spacer to assist in controlling the layout of your widgets.

 GeoFRED Map  
Use your saved GeoFRED maps in your dashboard.

**Add Widget to Dashboard**

**Close**

# DASHBOARD

ECONOMIC RESEARCH

# FRED

ECONOMIC DATA | ST. LOUIS FED

## Treasuries

+ Add Widget Actions ▾

Add Widget to Dashboard

TOO TREASURIES

ECONOMIC RESEARCH

# FRED

ECONOMIC DATA | ST. LOUIS FED

## Treasuries

+ Add Widget Actions ▾

### Add Widget

Back

Search  
Find data series by name

Saved FRED Graph  
Import FRED Graphs you have created.

Favorites  
Select a series from your list of favorites

Popular Series  
Choose from the Top 25 series by activity

Add Widget to Dashboard

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### Add Widget

Back

DGS10

Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity  
Daily, Percent, Not Seasonally Adjusted  
DGS10, 1962-01-02 to 2022-04-19

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News FRED Blog About FRED ▾

# DASHBOARD

ECONOMIC RESEARCH

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Treasuries

+ Add Widget Actions ▾

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Add Widget

Back

Title: Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity

Units: Percent

Observation Range: All 1 year 5 years 10 years Custom

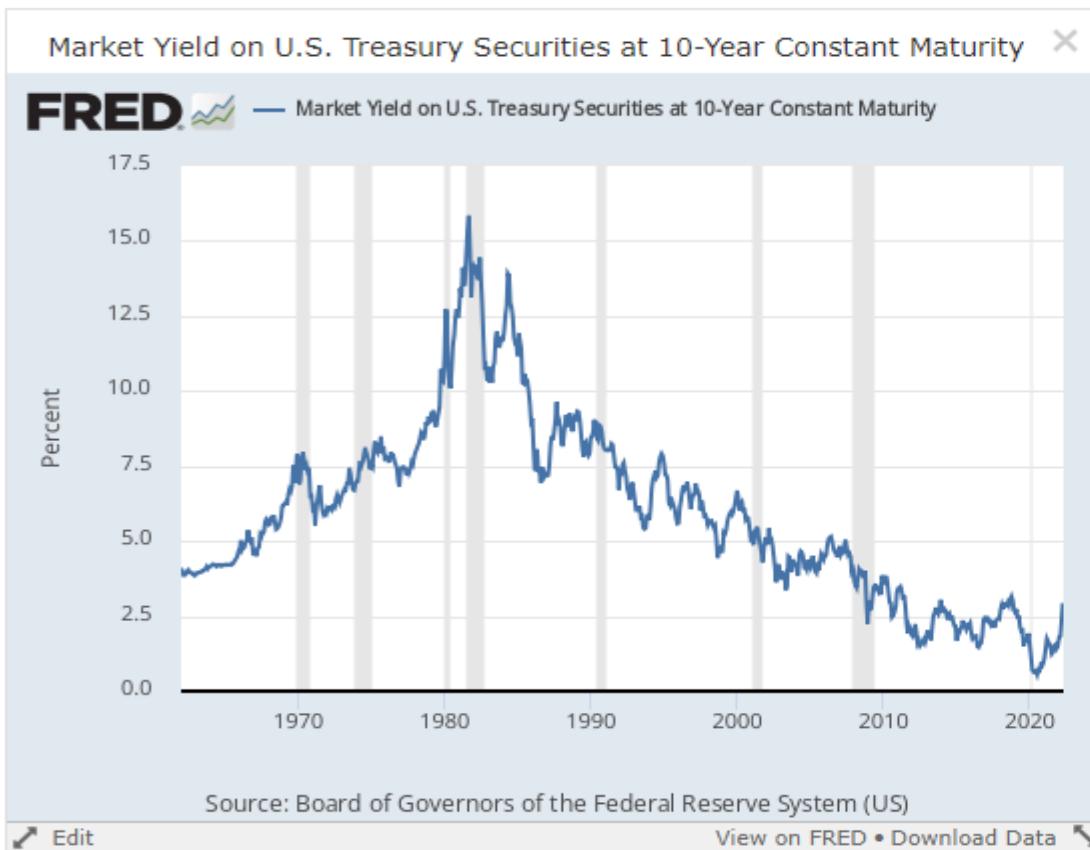
Add Widget to Dashboard

Close

# DASHBOARD

## Treasuries

+ Add Widget Actions ▾



# Agenda

- Web Tool
- FRED Accounts
- Excel Add In
- R API

# Excel Add In

- Installation
- Grabbing Data
- Transformations

# INSTALLING EXCEL ADD IN

Screenshot of Microsoft Excel showing the process of installing an add-in:

The ribbon bar shows the "Insert" tab selected. The "Get Add-in" button in the "Illustrations" group is highlighted with a red oval.

The "Office Add-ins" window is open, displaying a list of available add-ins. The "FRED Data" add-in is highlighted with a red oval. Its "Add" button is also highlighted with a red oval.

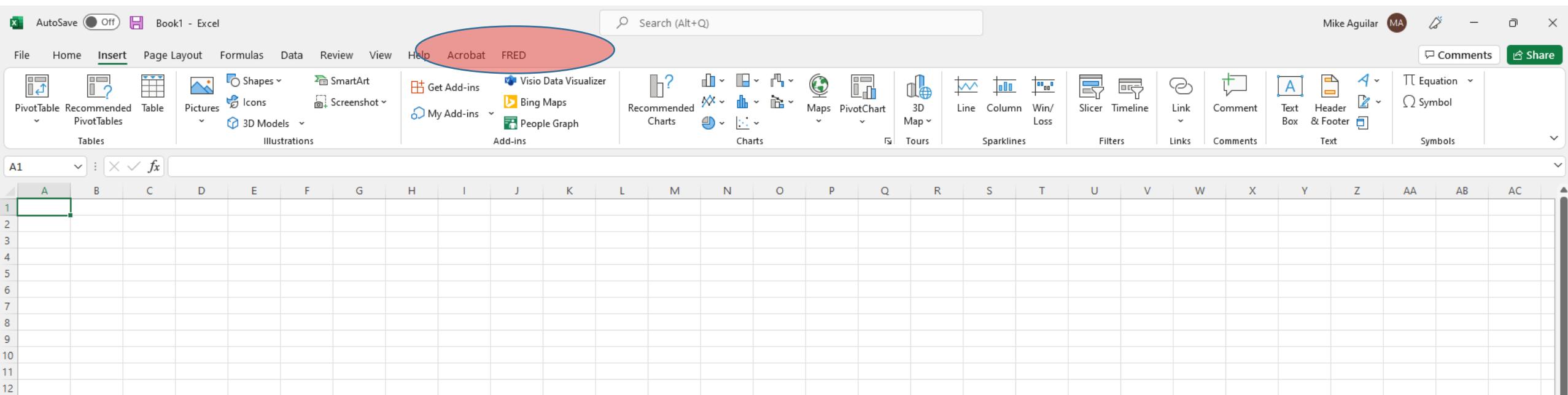
The "Sort by: Popularity" dropdown menu is visible above the add-in list.

The "Category" sidebar on the left includes options like All, CRM, Data Analytics, Document Review, Editor's Picks, Education, Financial Management, Maps & Feeds, Microsoft 365 Certified, Productivity, Project Management, Sales & Marketing, and Training & Tutorial.

The main content area lists the following add-ins:

- FRED Data**  
Download data from the Federal Reserve Bank of St. Louis Economic Data (FRED).  
★★★★★ (1)  
**Add**
- Big Red Cloud Power Accounting**  
Easily import / export data to and from Big Red Cloud online accounting software.  
**Additional purchase may be required**  
★★★★★ (1)  
**Add**
- Tiller Money Feeds**  
Tiller Money automates your daily bank and credit card transactions and balances into Excel.  
**Additional purchase may be required**  
★★★★☆ (2)  
**Add**
- Leitor de Feeds Mondial**  
Permite ao usuário visualizar as notícias desejadas no Excel  
**Add**

# INSTALLING EXCEL ADD IN



A screenshot of the Microsoft Excel ribbon interface. The 'Insert' tab is selected. A red oval highlights the 'Add-ins' section in the ribbon, which includes options like 'Get Add-ins', 'Visio Data Visualizer', 'Bing Maps', and 'People Graph'. Below the ribbon is the Excel worksheet area with columns A through AC and rows 1 through 12. Cell A1 is currently selected.

## IMPORTING DATA

Downloading FRED data into Excel is very simple. The key is understanding which rows of the Excel worksheet to input a Series ID, manipulation, aggregation, and start date. The only information that is necessary to get FRED data is the Series ID. If the other cells are blank, default settings will be used.

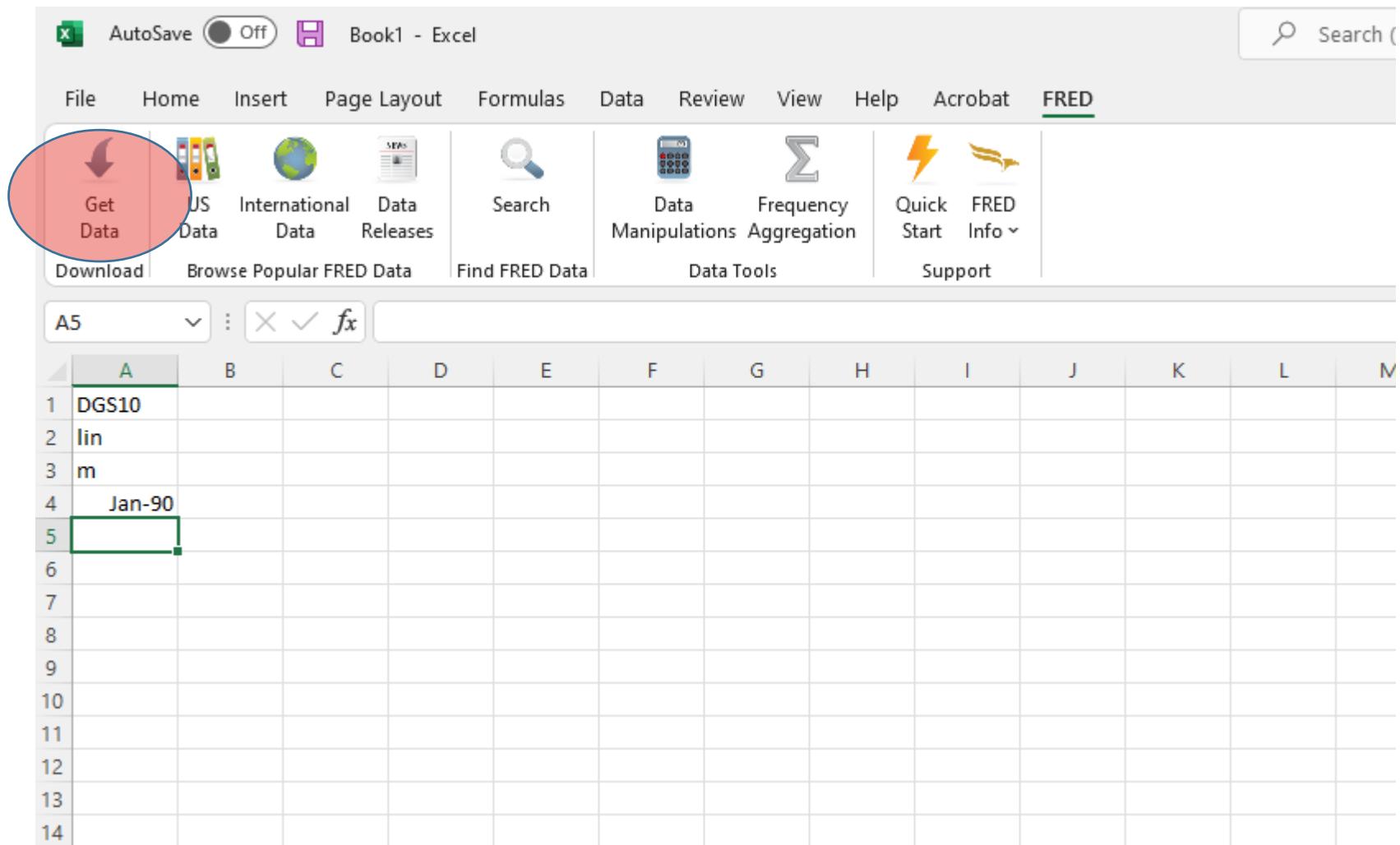
The screenshot shows the Microsoft Excel ribbon with the FRED tab selected. The FRED tab has several icons: Get Data, US Data, International Data, Data Releases, Search, Data Manipulations, Frequency Aggregation, Quick Start, and FRED Info. Below the ribbon is a sample Excel worksheet with columns A through H and rows 1 through 7. Cell A1 contains the formula '=GETDATA("PAYEMS")'. The data in the worksheet is as follows:

	A	B	C	D	E	F	G	H
1	payems							
2	chg							
3	q							
4		Jan-80						
5								
6								
7								

Below the worksheet, there are four buttons: Series ID, Data Manipulation, Data Frequency, and Series Start Date. Arrows from the text labels 'Series ID', 'Manipulation', 'Frequency', and 'Start Date' point to the corresponding cells in the worksheet.

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 search for Series IDs using the Search button on the FRED Add-in toolbar and be directed to the FRED website.

# IMPORTING DATA



The screenshot shows the Microsoft Excel ribbon with the 'FRED' tab selected. The 'Get Data' button in the first group of the FRED tab is highlighted with a red circle. The Excel interface includes the ribbon bar, a search bar, and a data entry area with cells A1 through A14 visible.

A	B	C	D	E	F	G	H	I	J	K	L	M
1 DGS10												
2 lin												
3 m												
4 Jan-90												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												

## IMPORTING DATA

A	B	C	D	E
1 DGS10				
2 lin	Percent, Not Seasonally Adjusted			
3 m, avg	Monthly			
4 Jan-90	1990-01-01 to 2022-04-01			
5 Market Yield on U.S. Treasury Securities at 10-Year Cor				
6 Board of Governors of the Federal Reserve System (US				
7 date	value			
8 1/1/1990	8.21			
9 2/1/1990	8.47			
0 3/1/1990	8.59			
1 4/1/1990	8.79			
2 5/1/1990	8.76			
3 6/1/1990	8.48			
4 7/1/1990	8.47			
5 8/1/1990	8.75			
6 9/1/1990	8.89			
7 #####	8.72			
8 #####	8.39			
9 #####	8.08			

# TRANSFORMATIONS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
DGS10		DGS10			DGS10			DGS10			DGS10			DGS10			DGS10			DGS10			DGS10			
In	Percent, Nchg	Change, Percent, No chg	1	Change from Year Ago	pch	Percent Change, Per	pc1	Percent Change from	pca	Compounded Annual Rate of Ch	ach	Continuously Comp	cca													
m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg	Monthly	m, avg		
1/1/1962	1962-01-01	2/1/1962	1962-02-01 to 2022-0	1/1/1963	1963-01-01 to 2022-0	2/1/1962	1962-02-01 to 2022-0	1/1/1963	1963-01-01 to 2022-0	2/1/1962	1962-02-01 to 2022-04-01	2/1/1962	1962-02-01 to 2022-0	2/1/1962	1962-02-01 to 2022-04-01	2/1/1962	1962-02-01 to 2022-0	2/1/1962	1962-02-01 to 2022-04-01	2/1/1962	1962-02-01 to 2022-0	2/1/1962	1962-02-01 to 2022-04-01	2/1/1962	1962-02-01 to 2022-0	
Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 1 Year	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	Market Yield on U.S. Treasury Securities at 10 Years	
Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	Board of Governors of the Federal Reserve System	
date	value	date	value	date	value	date	value	date	value	date	value	date	value	date	value	date	value	date	value	date	value	date	value	date	value	
1/1/1962	4.08	2/1/1962	-0.04374	-0.04000	1/1/1963	-0.24955	-0.250	2/1/1962	-1.07116	-0.98039	1/1/1963	-6.11154	-6.12745	2/1/1962	-12.123	-0.11151	-0.1212304	2/1/1962	-1.07694	-0.98523	2/1/1962	-12.9233	-12.9233	-11.8228		
2/1/1962	4.04	3/1/1962	-0.10899	-0.11000	2/1/1963	-0.11833	-0.120	3/1/1962	-2.69814	-2.72277	2/1/1963	-2.92945	-2.9703	3/1/1962	-27.9799	-0.28198	-0.279799	3/1/1962	-2.73521	-2.76053	3/1/1962	-32.8225	-32.8225	-33.1263		
3/1/1962	3.93	4/1/1962	-0.08745	-0.09000	3/1/1963	-0.00188	0.000	4/1/1962	-2.22505	-2.29008	3/1/1963	-0.04791	0	4/1/1962	-23.6637	-0.24271	-0.2366368	4/1/1962	-2.25018	-2.31671	4/1/1962	-27.0021	-27.0022	-27.8005		
4/1/1962	3.84	5/1/1962	0.030636	0.03000	4/1/1963	0.127952	0.130	5/1/1962	0.7972	0.78125	4/1/1963	3.32949	3.385417	5/1/1962	9.99719	0.097885	0.09997197	5/1/1962	0.79404	0.778214	5/1/1962	9.52846	9.52848	9.338569		
5/1/1962	MikeA:																									
6/1/1962	CAUTION: The raw data output from FRED is rounded, so any calculations based off of that loose precision.																									
7/1/1962																										
8/1/1962	If you use the built in FRED calculations, the calculations are more accurate.																									
9/1/1962																										
10/1/1962																										
11/1/1962																										
12/1/1962	3.86	1/1/1963	-0.03086	-0.03000	12/1/1963	0.264071	0.270	1/1/1963	-0.79865	-0.7772	12/1/1963	6.83326	6.994819	1/1/1963	-9.17378	-0.08938	-0.0917383	1/1/1963	-0.80185	-0.78024	1/1/1963	-9.62222	-9.62222	-9.36286		
1/1/1963	3.83	2/1/1963	0.087475	0.09000	1/1/1964	0.333182	0.340	2/1/1963	2.28177	2.349869	1/1/1964	8.69101	8.877285	2/1/1963	31.09279	0.32144	0.31092794	2/1/1963	2.25613	2.322685	2/1/1963	27.07352	27.07352	27.87222		
2/1/1963	3.92	3/1/1963	0.00746	0.01000	2/1/1964	0.224444	0.230	3/1/1963	0.19026	0.255102	2/1/1964	5.724	5.867347	3/1/1963	2.30717	0.031045	0.02307163	3/1/1963	0.19008	0.254777	3/1/1963	2.28095	2.28095	3.057326		
3/1/1963	3.93	4/1/1963	0.042381	0.04000	3/1/1964	0.290952	0.290	4/1/1963	1.07879	1.017812	3/1/1964	7.40606	7.379135	4/1/1963	13.74185	0.129212	0.13741883	4/1/1963	1.07301	1.012667	4/1/1963	12.87613	12.87612	12.152		
4/1/1963	3.97	5/1/1963	-0.04095	-0.04000	4/1/1964	0.26132	0.260	5/1/1963	-1.0313	-1.00756	4/1/1964	6.5808	6.549118	5/1/1963	-11.6972	-0.11443	-0.1169722	5/1/1963	-1.03665	-1.01267	5/1/1963	-12.4398	-12.4398	-12.152		
5/1/1963	3.93	6/1/1963	0.063	0.06000	5/1/1964	0.27	0.270	6/1/1963	1.60305	1.526718	5/1/1964	6.87023	6.870229	6/1/1963	21.02668	0.1994	0.2102663	6/1/1963	1.59034	1.515181	6/1/1963	19.08408	19.08408	18.18217		

Let's go to Excel

## DATES

A	B	C	D	E	F	G	H	I	J	K	L
DGS10		DGS10		DGS10							
lin	Percent, Min			Percent, Not Seasonal	lin						
m, avg	Monthly	m, eop		Monthly	d						
1/1/2021	2021-01-01		1/1/2021	2021-01-01 to 2022-01-01		1/4/2021	2021-01-04 to 2022-04-14				
Market Yield on U.S.	Market Yield on U.S.	Treasury Securities	Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity								
Board of Governors	Board of Governors	of the Federal Reserve	Board of Governors of the Federal Reserve System (US)								
date	value	date	value	date	value	date	value				
1/1/2021	1.08	1/1/2021	1.11			1/4/2021	0.93				
2/1/2021	1.26	2/1/2021	1.44			1/5/2021	0.96				
3/1/2021	1.61	3/1/2021	1.74			1/6/2021	1.04				
4/1/2021	1.64	4/1/2021	1.65			1/7/2021	1.08				
5/1/2021	1.62	5/1/2021	1.58			1/8/2021	1.13				
6/1/2021	1.52	6/1/2021	1.45			1/11/2021	1.15				
7/1/2021	1.32	7/1/2021	1.24			1/12/2021	1.15				
8/1/2021	1.28	8/1/2021	1.3			1/13/2021	1.1				
9/1/2021	1.37	9/1/2021	1.52			1/14/2021	1.15				
10/1/2021	1.58	10/1/2021	1.55			1/15/2021	1.11				
11/1/2021	1.56	11/1/2021	1.43			1/18/2021	#N/A				
12/1/2021	1.47	12/1/2021	1.52			1/19/2021	1.1				
1/1/2022	1.76	1/1/2022	1.79			1/20/2021	1.1				
2/1/2022	1.93	2/1/2022	1.83			1/21/2021	1.12				
3/1/2022	2.13	3/1/2022	2.32			1/22/2021	1.1				
4/1/2022	#N/A	4/1/2022	#N/A			1/25/2021	1.05				
						1/26/2021	1.05				
						1/27/2021	1.04				
						1/28/2021	1.07				
						1/29/2021	1.11	1.081053			
						2/1/2021	1.09				
						2/2/2021	1.12				
						2/3/2021	1.15				
						2/4/2021	1.15				
						2/5/2021	1.19				
						2/8/2021	1.19				
						2/9/2021	1.18				
						2/10/2021	1.15				
						2/11/2021	1.16				

**MikeA:**  
Caution: the date is listed as the 1st of the month eventhough this is the end of period

**MikeA:**  
By Default, FRED produces the daily avg.  
Caution: the date is listed as the 1st of the month

**MikeA:**  
Avg of the daily values

# Agenda

- Web Tool
- FRED Accounts
- Excel Add In
- R API

# R API

- Package installation
- Common usages

## FREDR

1. Obtain an API key from FRED [https://fred.stlouisfed.org/docs/api/api\\_key.html](https://fred.stlouisfed.org/docs/api/api_key.html)
2. Save that key in a csv file in the same directory as your code file. It should look like this

	A	B
1		Key
2	ID	PUT YOUR KEY HERE
3		

```
rm(list=ls()) # clear workspace  
cat("\014") # clear console
```

```
library(fredr)  
fred_api_key<-read.csv("../data/fredkey.csv",stringsAsFactors=FALSE)  
fredr_set_key(fred_api_key$key)  
mydata<-fredr(  
  series_id = "UNRATE",  
  frequency = "m", # monthly  
  observation_start = as.Date("1990-01-01"),  
  observation_end = as.Date("2000-01-01"),  
  units = "pc1" # % Delta 1yr ago  
)
```

## GETSYMBOLS

```
rm(list=ls()) # clear workspace  
cat("\014") # clear console
```

```
library(tidyquant)  
ticker = 'AAPL' # asset ticker  
start_date = '2014-09-25' # data start date  
end_date = '2015-02-01' # data end date  
data_src = 'yahoo' # data source  
freq = "daily" # data frequency  
getSymbols(ticker, from = start_date,  
          to = end_date, src=data_src, periodicity = freq)
```

```
## [1] "AAPL"
```

```
ticker = 'DEXUSEU' # ticker for "U.S. / Euro Foreign Exchange Rate", can be found from FRED website  
data_src = 'FRED' # data source  
getSymbols(ticker, src=data_src)
```

```
## [1] "DEXUSEU"
```

```
DEXUSEU = na.approx(DEXUSEU) # fill in missing values with mean of previous and next obs.  
### merge exchange rate and AAPL price  
dat=merge(AAPL$AAPL.Adjusted, DEXUSEU, join='left')  
### calculate adjusted price: covert USD price to EUR price(our original data price is USD based)  
dat$Price_EUR = dat$AAPL.Adjusted/dat$DEXUSEU  
head(dat)
```

```
##           AAPL.Adjusted  DEXUSEU Price_EUR  
## 2014-09-25      22.02841  1.2748  17.27989  
## 2014-09-26      22.67663  1.2686  17.87532  
## 2014-09-29      22.53258  1.2703  17.73800  
## 2014-09-30      22.67663  1.2628  17.95742  
## 2014-10-01      22.32326  1.2618  17.69160  
## 2014-10-02      22.48532  1.2670  17.74690
```

# Agenda

- Web Tool
- FRED Accounts
- Excel Add In
- R API