

U.S. Deficit and Debt

April 2011
(revised May 2011)

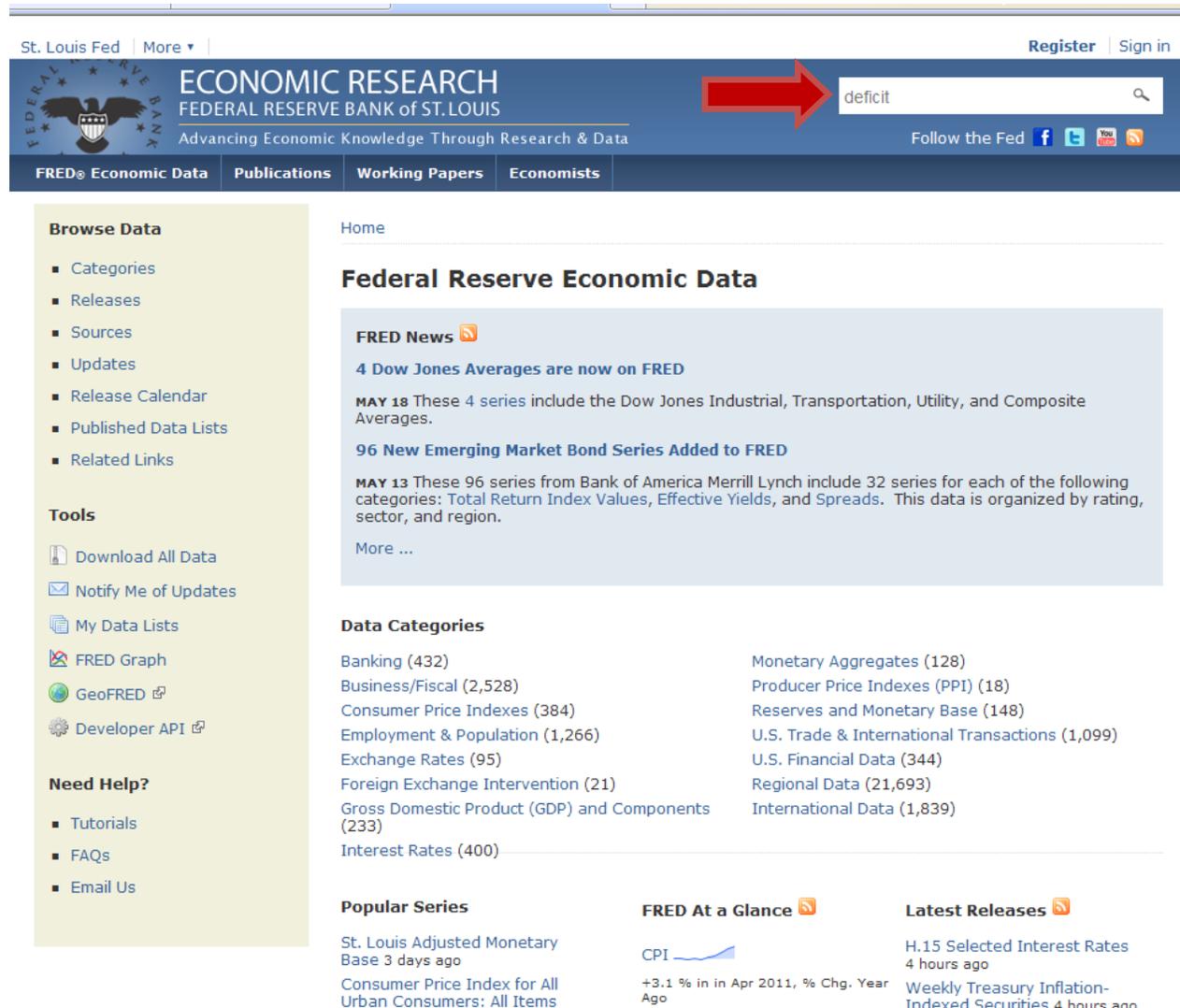
FRED Data Classroom Application



*Prepared by the Research Division of the
Federal Reserve Bank of St. Louis*

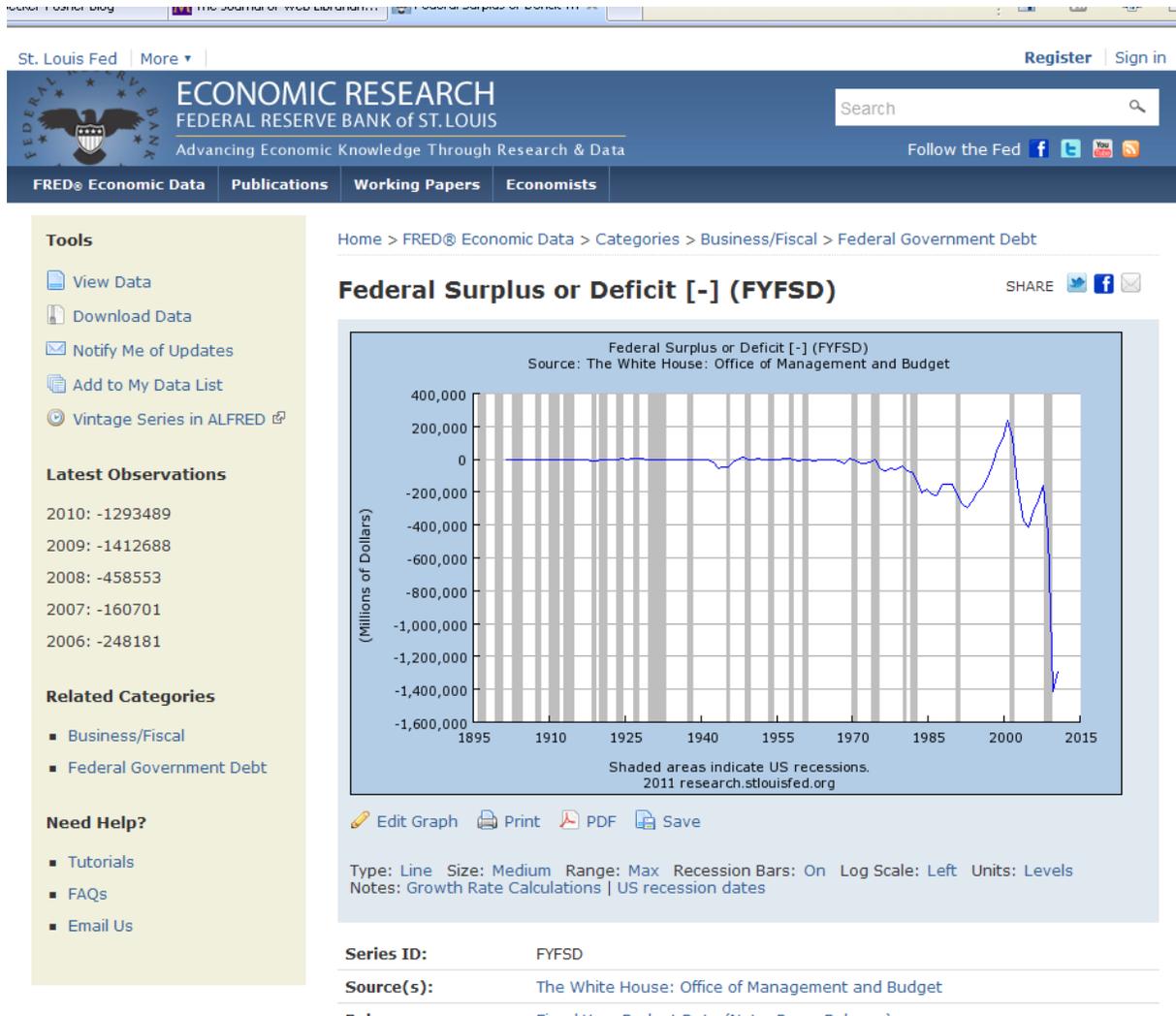
Search FRED for data on the U.S. deficit and debt. Below is an exercise for locating data, along with questions and activities related to the data.

1. Go to <http://research.stlouisfed.org/fred2/>
2. Using the Search box, type **deficit**.



The screenshot shows the FRED website interface. At the top, there is a navigation bar with "St. Louis Fed | More ▾" on the left and "Register | Sign in" on the right. Below this is a dark blue header with the FRED logo on the left, the text "ECONOMIC RESEARCH FEDERAL RESERVE BANK of ST. LOUIS Advancing Economic Knowledge Through Research & Data" in the center, and social media icons on the right. A search bar is located in the top right of the header, containing the word "deficit" and a magnifying glass icon. A red arrow points to the search bar. Below the header is a dark blue navigation bar with links for "FRED® Economic Data", "Publications", "Working Papers", and "Economists". The main content area is divided into several sections: "Browse Data" (with sub-sections like Categories, Releases, Sources, Updates, Release Calendar, Published Data Lists, Related Links), "Tools" (with sub-sections like Download All Data, Notify Me of Updates, My Data Lists, FRED Graph, GeoFRED, Developer API), "Need Help?" (with sub-sections like Tutorials, FAQs, Email Us), "Home", "Federal Reserve Economic Data", "FRED News" (with sub-sections like 4 Dow Jones Averages are now on FRED, 96 New Emerging Market Bond Series Added to FRED), "Data Categories" (with sub-sections like Banking, Business/Fiscal, Consumer Price Indexes, Employment & Population, Exchange Rates, Foreign Exchange Intervention, Gross Domestic Product (GDP) and Components, Interest Rates, Monetary Aggregates, Producer Price Indexes (PPI), Reserves and Monetary Base, U.S. Trade & International Transactions, U.S. Financial Data, Regional Data, International Data), "Popular Series" (with sub-sections like St. Louis Adjusted Monetary Base, Consumer Price Index for All Urban Consumers: All Items), "FRED At a Glance" (with a sub-section like CPI), and "Latest Releases" (with sub-sections like H.15 Selected Interest Rates, Weekly Treasury Inflation-Indexed Securities).

3. The graph of the data will be presented, along with the options that include viewing and downloading the data and making changes to the graph. Looking at the graph, what do the shaded areas (gray bars) represent?



4. What is a recession? When was the most recent recession?

5. What does the “zero” on the y-axis represent?

6. What is a budget surplus? What is a budget deficit?

7. To see the history of the series, choose **View Data** (to left of graph). Below is a screenshot of the Federal Surplus or Deficit data. In order to see the entire series, you will need to scroll down.

DATE	VALUE
1901-06-30	63
1902-06-30	77
1903-06-30	45
1904-06-30	-43
1905-06-30	-23
1906-06-30	25
1907-06-30	87
1908-06-30	-57
1909-06-30	-89
1910-06-30	-18
1911-06-30	11
1912-06-30	3
1913-06-30	0
1914-06-30	0
1915-06-30	-63
1916-06-30	48
1917-06-30	-853
1918-06-30	-9032
1919-06-30	-13363
1920-06-30	291
1921-06-30	509
1922-06-30	736
1923-06-30	713
1924-06-30	963
1925-06-30	717
1926-06-30	865
1927-06-30	1155
1928-06-30	939
1929-06-30	734
1930-06-30	738
1931-06-30	-462
1932-06-30	-2735
1933-06-30	-2602
1934-06-30	-3586

8. Looking at the data, in what year did the United States last experience a federal budget surplus, and how much was it? To answer this question you'll need to see the entire series.

9. Describe the trend in the data before World War II. What about after World War II?

10. The deficit is one measure of the government's financial situation. Another measure is the debt of the country as a percent of the gross domestic product (GDP). Define federal debt and GDP.

11. Now, locate the annual GDP data in FRED and then divide that number by the gross federal debt held by the public. (This is the most commonly used measure of the US debt.) Start with the FRED homepage. Under Data Categories, click on **Gross Domestic Product (GDP) and Components**.

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Federal Reserve Economic Data

FRED News

4 Dow Jones Averages are now on FRED

MAY 18 These 4 series include the Dow Jones Industrial, Transportation, Utility, and Composite Averages.

96 New Emerging Market Bond Series Added to FRED

MAY 13 These 96 series from Bank of America Merrill Lynch include 32 series for each of the following categories: Total Return Index Values, Effective Yields, and Spreads. This data is organized by rating, sector, and region.

More ...

Data Categories

Banking (432)	Monetary Aggregates (128)
Business/Fiscal (2,528)	Producer Price Indexes (PPI) (18)
Consumer Price Indexes (384)	Reserves and Monetary Base (148)
Employment & Population (1,266)	U.S. Trade & International Transactions (1,099)
Exchange Rates (95)	U.S. Financial Data (344)
Foreign Exchange Intervention (21)	Regional Data (21,693)
Gross Domestic Product (GDP) and Components (233)	
Interest Rates (400)	

Popular Series

St. Louis Adjusted Monetary Base 3 days ago

Consumer Price Index for All Urban Consumers: All Items

FRED At a Glance

CPI

+3.1 % in in Apr 2011, % Chg. Year Ago

Latest Releases

H.15 Selected Interest Rates 4 hours ago

Weekly Treasury Inflation-Indexed Securities 4 hours ago

12. In that category, choose **GDP/GNP**.



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Gross Domestic Product (GDP) and Components

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Categories

- GDP/GNP (23)
- Gov't Receipts, Expenditures & Investment (76)
- Imports & Exports (22)
- Industry (15)
- Personal Income & Outlays (59)
- Price Indexes & Deflators (9)
- Saving & Investment (29)

*Note that the number of series in a category and its subcategories is shown above in parentheses.

13. Choose **Gross Domestic Product** (click on the title) that is annual data and goes back to 1929. This is the annual GDP data, in billions of dollars.

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Home > FRED® Economic Data > Categories > Gross Domestic Product (GDP) and Components

GDP/GNP

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Show Only:

Selected Series: Series 1 - 23 of 23

<input type="checkbox"/>	Title	Observation Range Start	End	Freq.	Units	Seas. Adj.	Popularity ▾
<input type="checkbox"/>	Gross Domestic Product, 1 Decimal	1947:Q1	2011:Q1	Q	Bil. of \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Gross Domestic Product, 1 Decimal	1947:Q1	2011:Q1	Q	Bil. of Chn. 2005 \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Gross Domestic Product	1929	2010	A	Bil. of Chn. 2005 \$	NA	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Gross Domestic Product, 3 Decimal	1947:Q1	2011:Q1	Q	Bil. of Chn. 2005 \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Potential Gross Domestic Product	1949:Q1	2021:Q4	Q	Bil. of Chn. 2005 \$	NA	<div style="width: 100%;"></div>
<input checked="" type="checkbox"/>	Gross Domestic Product	1929	2010	A	Bil. of \$	NA	<div style="width: 100%;"></div>
<input type="checkbox"/>	Gross National Product	1947:Q1	2010:Q4	Q	Bil. of \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Gross National Product	1947:Q1	2010:Q4	Q	Bil. of Chn. 2005 \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	Gross National Product	1929	2010	A	Bil. of \$	NA	<div style="width: 100%;"></div>
<input type="checkbox"/>	Change in Private Inventories	1947:Q1	2011:Q1	Q	Bil. of \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Change in Private Inventories, 3 Decimal	1947:Q1	2011:Q1	Q	Bil. of Chn. 2005 \$	SAAR	<div style="width: 100%;"></div>
<input type="checkbox"/>	U.S. Total Gross Domestic Product by State	1997	2009	A	Mil. of \$	NA	<div style="width: 100%;"></div>
<input type="checkbox"/>	Real Gross National Product	1929	2010	A	Bil. of Chn. 2005 \$	NA	<div style="width: 100%;"></div>

14. Choose **Edit Graph** to make changes to the graph (which will involve adding the debt data and creating a new graph that shows the percent of debt to GDP).

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Home > FRED® Economic Data > Categories > Gross Domestic Product (GDP) and Components > GDP/GNP

Gross Domestic Product (GDPA)

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Gross Domestic Product (GDPA)
Source: U.S. Department of Commerce: Bureau of Economic Analysis

(Billions of Dollars)

16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0

1920 1930 1940 1950 1960 1970 1980 1990 2000 2010

Shaded areas indicate US recessions.
2011 research.stlouisfed.org

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Type: Line Size: Medium Range: Max Recession Bars: On Log Scale: Left Units: Levels
Notes: Growth Rate Calculations | US recession dates

Series ID: GDPA

Source(s): U.S. Department of Commerce: Bureau of Economic Analysis

15. The new graph may be edited—for this exercise, you will add the gross public debt data to the same line as the GDP data, and then divide the debt by GDP to get the ratio (percentage). First click on the **Add Data Series** section. *

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Graph: Gross Domestic Product (GDP)

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Gross Domestic Product (GDP)
Source: U.S. Department of Commerce: Bureau of Economic Analysis

(Billions of Dollars)

16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0

1920 1930 1940 1950 1960 1970 1980 1990 2000 2010

Shaded areas indicate US recessions.
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Settings [Restore Defaults](#) | [Save Settings](#) | [Apply Saved Settings](#)

- ▶ Graph
- ▶ Line 1: Gross Domestic Product (GDP)
- ▶ **Add Data Series**

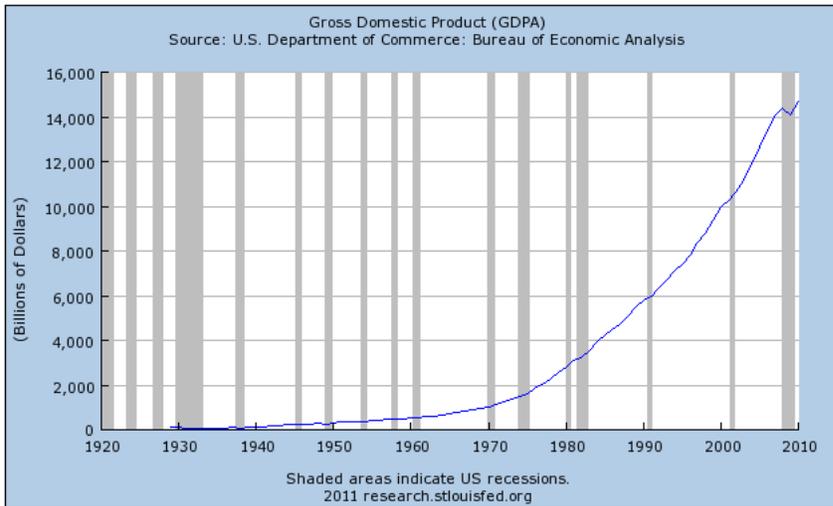
[Notes on growth rate calculations, US recession dates, and frequency aggregation](#)

***NOTE:** Every year, the Council of Economic Advisors issues the Economic Report of the President. This year it was released on February 24, 2011. That document contains the amount of gross federal debt held by the public. You can also find historical debt series at the Congressional Budget Office at [http://www.cbo.gov/ftpdocs/120xx/doc12039/historicalTables\[1\].xls](http://www.cbo.gov/ftpdocs/120xx/doc12039/historicalTables[1].xls) or from the Office of Management and Budget at <http://www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/hist07z1.xls>.

16. Then, change the button to “Line 1”. This will allow you to create a single line with the formula of debt/GDP. In the search box, type **gross public debt** to retrieve the series “Gross Federal Debt Held by the Public (FYGFDPUB)”.

Graph: Gross Domestic Product (GDP)

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Graph

Line 1: Gross Domestic Product (GDP)

Add Data Series

To: New Line Line 1 [What's This?](#)

Search: [Browse](#)

Notes on grc [agency aggregation](#)

- Gross Federal Debt
FYGFD, A, Bil. of S, NA
- Gross Federal Debt Held by the Public**
FYGFDPUB, A, Bil. of S, NA
- Federal Government Debt: Gross (Discontinued Series)
GFDEBT, Mar Jun Sep Dec, Bil. of S, SA

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Once you begin typing the term in the search box, you will receive suggested data series. Choose the “Gross Federal Debt Held by the Public” series. This series includes holdings of the Federal Reserve System and excludes holdings of the social security and other federal trust funds.

17. You will then see a Formula Box. Type in the correct formula to calculate the debt/GDP ratio (b/a), and then click **Redraw Graph**.

▼ **Line 1: Gross Domestic Product (GDPA)**

Scale: Line Style: Line Width: Mark Type: Mark Width: Color:

Observation Date Range: to
Observation Quick Range: Custom 1yr 5yrs 10yrs Max

Frequency: Aggregation Method:

(a) Gross Domestic Product (GDPA), Annual, 1929-01-01 to 2010-01-01

Units:

[Remove Data Series](#)

(b) Gross Federal Debt Held by the Public (FYGFDPUB), Annual, Fiscal Year, 1939-06-30 to 2010-09-30

Units:

[Remove Data Series](#)

Create Your Own Data Transformation

Use a formula to modify and combine data series into a single line. For example, invert an exchange rate **a** by using formula $1/a$, or calculate the spread between 2 interest rates **a** and **b** by using formula $a - b$.

Use the assigned data series variables above (e.g. **a**, **b**, ...) together with operators {+, -, *, /, ^}, braces {(,)}, and constants {e.g. 2, 1.5} to create your own formula (e.g. $1/a$, $a-b$, $(a+b)/2$, $(a/(a+b+c))*100$). The default formula 'a' displays only the first data series added to this line. You may also [add data series to this line](#) before entering a formula.

Formula:

Apply a Transformation to the Formula Result:

► [Add Data Series](#)

[Notes on growth rate calculations, US recession dates, and frequency aggregation](#)



18. This is the graph of the debt/GDP ratio for publicly held debt. Download the data in the graph.

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Shaded areas indicate US recessions.
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- ▶ Graph
- ▶ Line 1: FYGDPUB/GDPA
- ▶ Add Data Series

21. For 2010, what is the ratio? In a sentence, explain what this ratio measures.

22. Look at the graph. What was the cause of the largest increase in the debt to GDP ratio?

23. How does the federal government fund its deficits?