Assignment 2

There are **two** parts to this assignment. One focused on getting some empirical data, and one focused on GDP calculations in principle. Please complete both parts and submit as a word file by email.

# Empirical Assignment

For this assignment you will get to know the Federal Reserve Economic Database — a key source of macroeconomic data from a large number of government agencies as well as private providers.

## Get friendly with FRED

Watch the first 5 videos of the [“How to Use FRED”](https://www.youtube.com/embed/videoseries?list=PLKcwEC4jDwiN5sOIay2qkpjTuvRTvkdso) playlist.

## Recessions and recoveries

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| --- |
| Note |
| You can get annual Real GDP annualized quarterly growth in two ways with FRED. You can start with Real GDP (GDPC1) in billions of chained 2012 dollars and convert the units to “compounded annual rate of change,” or you can just use (A191RL1Q225SBEA) which produces the same chart. |

Produce a graph of annual Real GDP growth (percent change from preceeding period, quarterly, seasonally adjusted) from 1960 to the present. Download it as a png file and paste it in your homework (please adjust the size so it is reasonable).

1. How many recessions has the US economy undergone since 1960, quarter 2?

**9 recessions.**

1. How many quarters has each recession lasted?

**\*Note – recessions are dated by month, so quarter estimates are approximate\***

**1960 recession: 3.5 quarters**

**1974 recession: 6 quarters**

**1980 recession: 2 quarters**

**1981 recession: 5 quarters**

**1990 recession: 3 quarters**

**2011 recession: 2.5 quarters**

**2008 recession: 5.5 quarters**

**2020 recession: 1 quarter**

1. In terms of length and magnitude, which two recessions have been the most severe?

**Answers will vary. The idea is just to get familiar with looking at the length (shaded area) and the depth (the GDP growth line).**

**2008 is clearly a frontrunner, and perhaps the 1981 recession. The COVID recession is clearly extreme, but the shortest-lived recession on record.**

1. Which years had the longest period of uninterrupted growth in real GDP?

**1991 to 2001 just edges out the 1961 to 1970 period. One thing to note, however (we will talk about this later), is that the 1960s period has a higher average annual growth rate.**

## Shares of GDP

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| --- |
| Note |
| To find shares of GDP, you can either use the search bar and type “shares of gross domestic product”, or you can visit the page for the GDP data release, [Table 1.1.10](https://fred.stlouisfed.org/release/tables?rid=53&eid=13146). |

On a single graph, show the shares of annual gross domestic product between 1950 and the present for:

* Gross private domestic investment
* Net exports of goods and services
* Personal consumption expenditures
* Government consumption expenditures

Download your graph as a png file and paste it in your homework (please adjust the size so it is reasonable).

A graph showing the growth of the company's prices

Description automatically generated

1. Which share is the largest, and which is the smallest?

**Consumption has always been the largest share. Net exports are the smallest (this is not true of every country!)**

1. Do the shares remain constant over time or have they changed? If so, how? In particular, has the pandemic had any effect?

# Theoretical Assignment

## Nominal and Real GDP

An economy produces three goods: cars, computers, and oranges. Quantities and prices per unit for years 2012 and 2013 are as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (a) 2012   |  | Quantity | Price | | --- | --- | --- | | Cars | 10 | $2,000 | | Computers | 4 | $1,000 | | Oranges | 1,000 | $1 | |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (b) 2013   |  | Quantity | Price | | --- | --- | --- | | Cars | 12 | $3,000 | | Computers | 6 | $500 | | Oranges | 1,000 | $1 | |

Table 1: Example Economy

1. What is nominal GDP in 2012 and in 2013? By what percentage does nominal GDP change from 2012 to 2013?

**2012 GDP: 10 ($2,000) + 4($1,000) + 1000 ($1) = $25,000**

**2013 GDP: 12 ($3,000) + 6($500) + 1000 ($1) = $40,000**

**Nominal GDP has increased by 60%.**

1. Using the prices for 2012 as the set of common prices, what is real GDP in 2012 and in 2013? By what percentage does real GDP change from 2012 to 2013?

**2012 real (2012) GDP: $25,000**

**2013 real (2012) GDP: 12 ($2,000) + 6 ($1,000) + 1000 ($1) = $31,000**

**Real (2013) GDP has increased by 24%.**

1. Using the prices for 2013 as the set of common prices, what is real GDP in 2012 and in 2013? By what percentage does real GDP change from 2012 to 2013?

**2012 real (2013) GDP: 10 ($3,000) + 4 ($500) + 1,000 ($1) = $33,000**

**2013 real (2013) GDP: $40,000.**

**Real (2013) GDP has increased by 21.2%.**

1. Why are the two output growth rates constructed in parts b and c different? Which one is correct? Explain your answer.

**The answers measure real GDP growth in different units. Neither answer is incorrect, just as measurement in inches is not more or less correct than measurement in centimeters.**

## Transactions

Determine whether each of the following tansactions contributes to the calculation of GDP as total spending. If if it coes contribute to GDP, then identify the relevant component of GDP (C, I, G, or NX)

1. Michelin sells tires to Nissan to install on their 2022 Sentras that are produced and sold in the United States

**This is an intermediate good, so not counted in final expenditures.**

1. Molly Maid provides house cleaning services across the United States

**This is a service (consumption) and is counted in GDP.**

1. U.S. consumers import $3.5 billion of woven apparent from Bangladesh

**This is not produced in the borders of the United States so not counted in GDP (imports).**

1. The U.S. government spent $523.1 billion on national defense

**This is a Government expenditure on final goods, so it is counted in GDP.**

1. Entrepreneur and *Shark Tank* investor Barbara Corcoran purchases 15% of Cousins Maine Lobster food truck company for $55,000.

**This is the purchase of a legal claim on future earnings – it is not a purchase of a produced good or service, so it is not counted.**

## Exceptions

Explain a scenario in which money is spent and not counted in GDP **or** a scenario in which money is not spent but something gets counted in GDP.

**Answers will vary but should likely mention homeowners' imputed rent or imputed financial services expenditures (counting the opportunity cost of your checking account).**