

Assignment No. 2

Due November 14, 2021

GDP AND ITS COMPONENTS

The GDP data we will look at is from the [United Nations' National Accounts Main Aggregates Database](#), which contains estimates of total GDP and its components for all countries over the period 1970–Present. We will look at how GDP and its components have changed over time, and investigate the usefulness of GDP per capita as a measure of wellbeing.

To answer the questions below, download the data and make sure you understand how the measure of total GDP is constructed.

- Go to the United Nations' National Accounts Main Aggregates Database website. On the right-hand side of the page, under 'Data Availability', click 'Downloads'.
- Under the subheading 'GDP and its breakdown at constant 2015 prices in US Dollars', select the Excel file 'All countries for all years – sorted alphabetically'.
- Save it in an easily accessible location, such as a folder on your Desktop or in your personal folder.

Type your responses to the questions below. Label all tables/charts with clear titles as shown below.

There are three different ways in which countries calculate GDP for their national accounts, but we will focus on the expenditure approach, which calculates gross domestic product (GDP) as:

$$\begin{aligned} \text{GDP} &= \text{Household consumption expenditure} \\ &+ \text{General government final consumption expenditure} \\ &+ \text{Gross capital formation}^1 \\ &+ (\text{Exports of goods and services} - \text{Imports of goods and services}) \end{aligned}$$

¹ Also referred to as investment! Gross capital formation refers to the creation of fixed assets in the economy (such as the construction of buildings, roads, and new machinery) and changes in inventories (stocks of goods held by firms).

1. Rather than looking at exports and imports separately, we usually look at the difference between them (exports minus imports), also known as net exports. Choose two countries that have GDP data over the entire period (1970 to the latest year available). For each country, create a new row that shows the values of net exports in each year. Make sure to give each row an appropriate label.

Now, we will create charts to show the GDP components in order to look for general patterns over time and make comparisons between countries.

2. Evaluate the components over time, for two countries of your choice. Use the **same** countries that you chose for Question 1. Every student will choose different countries.
 - (A) Create a new row for each of the four components of GDP (Household consumption expenditure, General government final consumption expenditure, Gross capital formation, Net exports). To make the charts easier to read, convert the values into billions (for example, 4.38 billion instead of 4,378,772,008). Round your values to two decimal places.
 - (B) Plot a separate line chart for each country, showing the value of the four components of GDP on the vertical axis and time (the years 1970–Present) on the horizontal. (Use more than one line chart per country if necessary, to show the data more clearly). Name each component in the chart legend appropriately.
 - (C) Which of the components would you expect to move together (increasing or decreasing together) or move in opposite directions, and why? Using your charts from Question 2(b), describe any patterns you find in the relationship between the components. Does the data support your hypothesis about the behavior of the components?
 - (D) For each country, describe any patterns you find in the movement of components overtime. What factors could explain the patterns that you find within countries, and any differences between countries (for example, economic or political events)? You may find it helpful to research the history of the countries you have chosen.
3. Another way to visualize the GDP data is to look at each component as a proportion of total GDP. Use the **same** countries that you chose for Questions 1 & 2.
 - (E) For each country, create a new row in Excel to show the sum of all four components (remember that this total may not add up to the reported GDP). Next, create a new row for each component, showing its proportion of total GDP (as a value ranging from 0 to 1), rounded to two decimal places. (Hint: to calculate the proportion of a component, divide the value of that component by the sum of all four components.)
 - (F) Plot a separate line chart for each country, showing the proportion of the component of GDP on the vertical axis and time (the years 1970 to the latest year available) on the horizontal axis.
 - (G) Describe any patterns in the proportion of spending over time for each country, and compare these patterns across countries.
 - (H) Compared to the charts in Question 2, what are some advantages of this method for making comparisons over time and between countries?

So far, we have done comparisons of time series data, which is a collection of values for the same variables and subjects, taken at different points in time (for example, GDP of a particular country, measured each year). We will now make some charts using cross-sectional data, which is a collection of values for the same variables for different subjects, usually taken at the same time.

4. Choose three developed countries, three countries in economic transition, and three developing countries (for a list of these countries, see [\(Tables A-C in the UN country classification document\)](#)).
 - (I) For each country, calculate each component as a proportion of GDP for the year 2015 only. (You may find it helpful to copy and paste the relevant data into a new Excel sheet.)
 - (J) Now create a stacked bar chart that shows the composition of GDP in 2015 on the horizontal axis, and country on the vertical axis. Arrange the columns so that the countries in a particular category are grouped together. ([See the walk-through in Figure 3.8 of Economy, Society, and Public Policy.](#))
 - (K) Describe the differences (if any) between the spending patterns of developed, economic transition, and developing countries

