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Final Project Documentation

YouTube Link:

Dataset: https://youtu.be/mNS0es5c7j0

The dataset that was used for the final project was put together by using data from the book, “The Macroeconomics for Corruption”, and the website of the U.S. Bureau of Labor Statistics. Here is a snapshot of the data used:

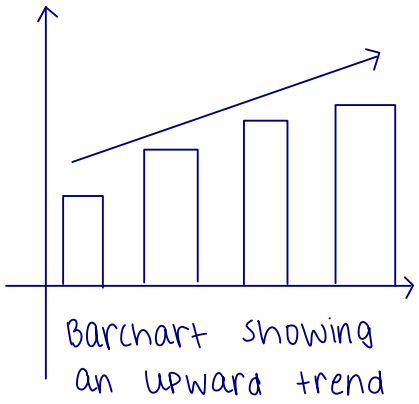
Year	GDP	GDPCapita	DebtGDPRati	WorkerProductivity
2010	14992.05	48467	91.2	3.4
2011	15542.58	49883	95.8	0
2012	16197.01	51603	100	0.9
2013	16784.85	53107	100.7	0.5
2014	17527.16	55050	100.62	0.9
2015	18238.3	56863	100.1	1.3
2016	18745.08	58021	105.2	0.3
2017	19542.98	60110	104.6	1.3
2018	20611.86	63064	105.4	1.4
2019	21433.22	65280	106.8	1.7
2020	20936.6	63544	128.1	1.9

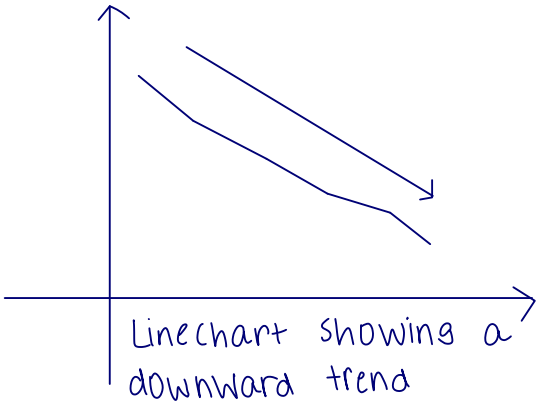
The data shows the Gross GDP, GDP per capita, the government debt to GDP ratio, and the growth in worker productivity every year.

Design Process:

Out of all the attributes in the dataset, the attributes Gross GDP, GDP per capita, debt to GDP ratio, and growth in worker productivity per year. This is because they are talked about the most. In the first visualization, I sought to seek the trajectory of the Gross GDP per year. We all have heard the news that the economy is not doing well. Economically speaking, it means that

the Gross GDP for a given year is less than the Gross GDP for previous years. I also decided to get the GDP per capita for each year to get an idea as to how much an average person is making per year. In the second visualization, I wanted to explore the trajectory of the growth in worker productivity per year. This attribute just gives an idea as to the growth in the efficiency of workers. I also wanted to explore how this attribute interacted with the debt to GDP ratio. This is because economists say that the higher this ratio is, the slower the growth in worker productivity is.





Justification for Design Choices:

For the first visualization, I decided to use a bar chart since it is very easy to tell the trend in the data. I also decided to incorporate the GDP Per Capita in the bar chart by using animation. For the second visualization, I could have chosen a bar chart too. However, the growth in worker productivity per year was very erratic. Hence, a line chart felt more appropriate for this data. The line chart showed this erratic trend. I also decided to add the Debt to GDP Ratio through animation. I chose the color green, specifically the shade of green that is the color of the currency notes, to go with the overall theme of the data.

Results:

For the first visualization, the Gross GDP per year increased from 2010-19, after which it dipped. This made sense because the GDP took a hit in 2020 because of the pandemic. Upon

hovering over the bars, the GDP per capita was displayed for that year. The GDP per capita did seem to increase for every year in the dataset. However, the GDP per capita didn't account for the rise inflation. For the second visualization, there was no clear trend. The growth in worker productivity didn't seem to increase or decrease; it was more erratic. The line chart also displayed the Debt to GDP Ratio every year. The Debt to GDP Ratio did, however, seem to have an impact on the growth rate. A higher ratio meant slower growth than the previous year or a slower rate of growth. This makes sense because if the government is in a lot of debt, the revenue generated would be used towards the repayment of debt and not for investment in resources that stimulates the growth in worker productivity.

References:

Ivanya, Maksym. *Macroeconomics of Corruption: Governance and Growth*. SPRINGER NATURE, 2022.

https://www.bls.gov

https://www.tutorialsteacher.com/d3js/animated-bar-chart-d3

https://www.w3schools.com/css/css_positioning.asp

https://developer.mozilla.org/en-US/docs/Web/API/Document/createElement

http://bl.ocks.org/biovisualize/1016860

https://stackoverflow.com/questions/46779698/formatting-labels-for-x-axis-in-d3js

https://pietschsoft.com/post/2015/09/05/javascript-basics-how-to-create-a-dictionary-with-keyvalue-pairs

https://stackoverflow.com/questions/16549868/d3-remove-comma-delimiters-for-thousands

https://stackoverflow.com/questions/41940439/display-multiple-d3-js-charts-in-a-single-html-page

https://d3-graph-gallery.com/graph/line_basic.html

Murray, Scott. *Interactive Data Visualization for the Web*. O'Reilly, 2013.