Tertiary Government Spending Analysis

DSC 530

Alan Danque

**Statistical / Hypothetical Question:**

Does government spending on tertiary education affect a countries GDP?

Education is an important factor for any level of success. It helps improve one’s health, living conditions for societies and economic conditions for a country as a whole. Striving for a higher education leads to a likeliness of higher pay and the creation of better products & services. Which also leads to more opportunities, better jobs and thus a larger distribution of income over a country’s population. This type of growth increases the probability of societal activities such as “voting, volunteering, political interest and interpersonal trust.” (jackallenyehuda, 2016)

I have always felt that the strongest countries can be defined by how each countries government can invest into their future. Specifically, in tertiary education spending. There are many measures of strength for a country. One important indicator of strength and growth is GDP per capita. GDP or Gross Domestic Product is a standard measure of domestic economic output which is divided by its total population. For this measure I have always been curious about how a countries population growth and their spending on tertiary education would affect the GDP per capita. My goal after performing this analysis is to identify these top performing countries and then later review how they are able to stabilize and build their growth.

This project explores and analyzes a big query dataset made available from the World Bank found on the Kaggle site. World Bank is an international financial institution that provides loans to countries of the world for capital projects. This banks goal is the reduction of poverty. This dataset displays the population, government spending on tertiary student education, the GDP at capita per country.

**Outcome of my exploratory data analysis**

Using Spearmans R and Pearsons correlation to test a government’s tertiary spending and its GDP, I found that the variables have moderate to weak correlations. However they are still significant and thus reject the null hypothesis that they do not have a relationship. Furthermore, since the PMF, CDF and Pareto distribution plots show similarities between countries that invest in tertiary education also have a stronger level GDP per Democratic countries.

**What do I feel was missed during the analysis?**

Earlier I thought I could use the type of government I found on the CIA.gov website for my Boolean comparison similar to first born and other. However, was able to later find a better Boolean indicator on a Wikipedia site website that helped define democratic vs nondemocratic countries.

**Were there any variables you felt could have helped in the analysis?**

Yes, I believe a discrete variable that indicated that a student with financial education assistance was able to find a job or started a company after college would help. As this variable would help indicate a rate of effectiveness per government education funding.

**Were there any assumptions made you felt were incorrect?**

Per the phrase, “correlation is not causation.” I do feel that investing in tertiary education does not create a stronger economy per the GDP per capita variable I used in my analysis. After having completed this analysis, I believe that there may be a combination of variables including the ones mentioned in my analysis that contributes to stronger economy.

**What challenges did you face, what did you not fully understand?**

I felt time was a challenge. I did feel compelled to want to understand more of the code behind the packages that I have imported in my project. However, was able to refrain from doing so in order to pace myself on time appropriately between my job related work, school work and family related homework help with my 3 kids.

Other than time, I felt trying to remember all of the names, techniques and how they work at any point in time is going to be a challenge until I have logged more than 10k hours of practicing these newly learned techniques.

Resources:

Jackallenyehuda, (December 2016). The Benefits of Higher Education. Retrieved from <https://www.hastac.org/blogs/jackkunis/2016/12/08/benefits-higher-education>

DataSet Sources:

<https://www.kaggle.com/theworldbank/world-bank-intl-education>

[World Bank website](http://data.worldbank.org/data-catalog/ed-stats)

<https://en.m.wikipedia.org/wiki/Democracy_Index#Democracy_Index_by_country_2018>

<https://www.cia.gov/library/publications/the-world-factbook/fields/299.html>