CSC343 - Project Phase 3

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GDP, GDP Per Capita and Employment Rate

In this discussion, we analyze a dataset of countries over the years 2016-2019 by investigating the effects of age, education level and enterprise size on their GDP, GDP per capita and employment rate. In this exploration we refer to the queries in the file *queries.sql* to support our analysis.

Question 1: Effect of Age on Employment and GDP per capita

The age range of '25_54' is the age group with the highest employment rate in all countries (line #133). That means people within the age range of '25_54' have a higher chance of getting a job than any other age group. This result seems to be expected as people in this age group usually are considered the active working population. Specifically, this age group have the highest chance of finding a job in 'Iceland' (line #146) and the lowest chance in 'South Africa' (line #159). This result can be due to the overall employment rate of these countries which is the highest in 'Iceland' and the lowest in 'South Africa' (lines #87, #94).

'Iceland' has the greatest population of old age (i.e. '55_64') employment among all countries with an average old employment of 82.58% (line #178). One interesting point is that, 5 out of 10 top highest GDP per capita countries including 'Switzerland', 'Norway', 'Iceland', 'Netherlands', and 'Denmark' are among the countries that have the highest employment of old age group (line #178, #58). One inference can link these countries' wealth to the fact that even their oldest population contributes to employment, much more than in any other countries. In another view, the high rate of old employment in these countries could be due to their higher older population rate. That means due to the lack of a younger population, the help of elderly people is deemed necessary to meet the workforce needs and this in turn increases their old employment rate. Having a high rate of old population indicates lower population growth and hence higher GDP per capita.

Question 2: Effect of Education Level on Employment, GDP and GDP per capita

'POST_SECONDARY' is the education level that has the highest employment rate in all countries (line #210). Most of the countries that have the highest employment in the 'POST_SECONDARY' level are also the countries that have the overall highest employment rate (line #220, #87). Examples of these countries are 'Switzerland' and 'Iceland'. The countries that have the lowest employment in the 'POST_SECONDARY' level also include many of the countries with the lowest employment rate (line #231, #94). Examples of such countries are 'Greece' and 'Turkey'.

To find out how the effect of education varies across different education levels, we calculate the standard deviation of the employment rate across all three levels 'POST_SECONDARY', 'UPPER_SECONDARY' and 'LOWER_SECONDARY'. The highest standard deviation value is around 19.53, which indicates on average the difference between the employment rate of different education levels is 19.53% (line #274). 'Slovakia' and 'Poland' are the two top countries with highest standard deviation. This high deviation is mostly the result of their low employment rate in 'LOWER_SECONDARY' which is 38.25 for 'Slovakia' and 42.64 for 'Poland'. (line #281). That indicates people with a 'LOWER_SECONDARY' education have even a lower chance of finding a job in these two countries compared to other countries. On the contrary, 'Colombia', 'South Korea' and 'Saudi Arabia' are three top countries with the lowest standard deviation (line #286). This low deviation is because the rate of employment does not change too much across different education levels in these three countries (line #293). So in these countries, one has rather equal chances of finding a job regardless of being in any of the 3 education levels.

The value of the standard deviation does not have a predictable pattern of variation across countries with highest GDP (line #299). The lowest standard deviation belongs to 'Indonesia' and the highest belongs to 'France', while a country like 'USA' which belongs to both high GDP and GDP per capita list, has a standard deviation somewhere in between. These results indicate that the education level seems to affect the GDP of a country based on its economic structure. For a country like 'Indonesia', the economic structure might be such that people with different education levels are more equally likely to get a job (line #305). In contrast, the economic structure of 'France' might necessitate people to get higher education to find a job (line #308). In the case of the 'USA', the economic sectors are such that anyone with any education level still can find a job based on their skill sets. Comparing the standard deviation in countries with highest GDP per capita (line #310) also shows similar results. Again a country like 'Iceland' has a certain economic type in which the education level matters less for employability compared to a country like 'Ireland' (lines #318, #319).

Question 3: Effect of Enterprise Size on GDP and GDP per capita

The enterprise size of '1_9_EMPLOYED' has the highest number of enterprises in almost all countries (line #354). Countries with the highest GDP like 'Japan' and relatively high GDP like 'Turkey' have the greatest number of small enterprises (lines #360, #373). Considering countries with the highest GDP per capita will add 'Netherlands' to this list (line #379). This specially indicates that the economy of these specific high income countries depend on their small business by a large factor.

Another question is whether there is a relationship between countries with a higher number of big enterprises (i.e. '250MORE_EMPLOYED') and their GDP and employment. Again many of the highest and relatively high GDP countries are among the ones with the greatest number of large enterprises (line #399). Having the high GDP countries on the list of countries with big enterprises is certainly not a surprise, since most of these high GDP countries rely on big enterprises and factories to produce such high GDP. We can conclude that higher GDP countries tend to have higher big sized enterprises. On the other hand, having a higher number of large enterprises does not seem to affect employment rate directly as much. In fact, both countries with the highest and lowest employment rate are rather equally shown to have large enterprises (line #399, #87, #94).