Global Market Growth Report

19/11/2021

Contents

**1.0** What this project is about

**1.1** Software used

**1.2** Aims and objectives

**2.0** Average growth per country map

**2.1** Growth sector map

**2.2** Decline sector map

**3.0** Array of graphics

**3.1** 2015 results

**3.2** 2016 results

**3.3** 2017 results

**3.4** 2018 results

**3.5** 2019 results

**4.0** Data creation of select countries

**5.0** 5-year average growth map

**5.1** 5-year average growth per sector chart

**5.2** 5-year average growth per income level

**5.3** Job income bracket map

**6.0** Specific data selection

**6.1** Highest growth sector per select nation

**6.2** Highest decline sector per select nation

**7.0** Conclusion/ Hypothesis test

**1.0** In this project I have a set of data regarding the job labour market for many different countries around the world. This data contains information about year-on-year growth, different sectors, different industries, pay rate and many other details. This data has been cleaned and structured in MySQL and Excel, to then be sourced into Tableau to create a visual representation of different aspects of the data so that we can pull meaningful insight out of the raw data.

**1.1** As previously stated, this project will use MySQL to import the data through the import wizard section, furthermore MySQL will be used to clean the data and then construct several different tables containing meaningful information for analysis. Excel will be used for some aspects of the data cleaning phase such as finding averages and then using paste special to get a piece of data as a decimal rather than a percentage. Tableau will be the main component of data visualisation; I find maps to be the most constructive tool to represent the data as representing different nations can be structured in this format well. Other methods such as bar charts, bubble graphs and box and whisker plots will be used to add extra depth to the analysis.

**1.2** The aim of this project is to understand the different aspects of the labour market regarding each individual country, in which using different tools to gain insight on how Geography, Politics and Wealth play a role in the labour market globally. It is very important to understand what industries are growing and which are declining, on a country-by-country basis and on a global level. My hypothesis is that in the western world there is more growth in the market, particularly in technology related jobs, seeing the phasing out of sectors such as manufacturing and mining. I also believe that developing nations such as China will have solid growth in the labour market in all aspects related to gaining maximum output rather than industries such as art and entertainment. Finally, I believe that countries who often suffer geographically and politically such as African nations will also struggle to show any signs of labour market growth.

Text

Description automatically generatedGraphical user interface, application

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This report will feature several boxes like this to describe the processes of manipulating data.

The top image is how I created a table in MySQL to store all the data, this table consists of strings and integers. Through MySQL import wizard I was able to import the dataset I wanted to use for this project. This table created was used as the framework for the data to then import in to. The import stage took some time due to there being over seven thousand rows to create.

The bottom image shows a string of repetitive syntax where the average for each year was calculated and then grouped by country name, this gave me the structure of average growth rate in relation to country name for each year, from this I was able to create many of the following graphics. I used this query result and structured the results into another table shown below which separated the data into clear useable sections from the original data block.

Table

Description automatically generated

**Map

Description automatically generated2.0** This first graphic represents the average growth per country across all sectors from the year 2015 to 2019. The graph is colour co-ordinated where the darker the blue colour the greater the growth and the darker the red colour the greater the decline. Any country which has an element of blue in has experienced positive labour market growth over these five years, however any that are red unfortunately have experienced a decline. The key to the right of the image gives greater clarity on the colour coding for the different nations. Straight off the bat, it is clear the western countries plus Australia and New Zealand are all the ones with the strongest growth. Those countries who are situated near the equator are almost all in the negative, sparing some oil wealthy nations such as Saudi Arabia, however some are really pushing into economic crisis such as Venezuela with a minus 7.88 decline. Furthermore, developing nations such as India and China show negative figures which was quite surprising, however since this is a total average many important industries may be booming which isn’t quite represented in the visualisation.

**2.1** Starting in the blue corner, the western powers hold the strongest growth figures over this time-period. Geographically these regions generally don’t struggle with extreme weather such as mass flooding, devastating earthquakes, and draughts, all these favourable conditions mean that economic activities can run smoothly. Historically the West has established itself over the years so that it has an upper hand in terms of trade and information, this means that the West has an advantage of already being established whereas developing countries such as China and India who have had to deal with a turbulent past are a couple of steps behind when catching up to the West. Politically western nations are all democratic, this means that there is a free market and a stable system to provide education and jobs. There is also effective macroeconomic policy to keep labour market growth constant, such as degree funding for in demand industries and of course wage determines where an individual will provide their labour, so industries which are in more demand will offer greater wage and thus constant supply of labour. Western countries are very wealthy compared to the rest of the world which means that they can invest in many different things to keep the labour market growing, this could be investment in research so that there are new jobs in areas such as medical advancement and technology, also public investment in schools and universities to supply educated individuals into the labour market.

**2.2** In the red corner, we must first discuss Venezuela, this nation has the worst decline in the world. Venezuela has been politically volatile in this time, causing mass inflation and unrest. These political reasons are surely the determining factor for such poor economic conditions. The red and orange countries all share the similar geographic difficulties, most being on the equator. Touching on the continent of Africa and the Middle East they are both situated in difficult climates, these climates cause water shortages as well as sparce resources, this causes the multiplier effect where these issues lead to little opportunity and little wealth for these nations. Politically some of these countries were run by dictators in recent history such as Iraq and Libya, this meaning that there is no free market and labour is decided by the state causing mass instability. In wake of these countries liberations there has been extreme political unrest and even war, these are awful conditions for structuring an efficient labour market. All these factors lead to these nations being extremely poor and therefore there is little to no investment in education, health, infrastructure, and incentives to supply labour to the market, thus resulting in poor labour market growth.

**3.0** The following graphics show the year-by-year breakdown of labour market growth. The story is generally the same as the overall period baring some one-off events which could cause outliers in the information. The purpose of these following graphics is to provide different perspectives of the data over this time-period. Each graphic will have a short explanation of what it represents.

A picture containing background pattern

Description automatically generated

A picture containing chart

Description automatically generatedChart, bar chart, box and whisker chart

Description automatically generatedMap

Description automatically generated

**3.2** This graphic represents the average growth per country across all sectors in the year 2016. This chart is a side-by-side bar chart sorted in ascending order. Along the X axis are the different nations and along the Y axis is the level of growth spanning from below 10% to above 10%. The colour code provides an extra level of detail where the darker the red the lower the growth and the darker the blue the higher the growth. The scale of this is shown on the key above the chart.

**3.3** This graphic represents the average growth per country across all sectors in the year 2017. This chart, like the previous map-based ones shows the scale of growth. This one however uses a six-colour step where the growth percentage is categorised into one of the steps and that colour is printed on the chart, again the darker the red the lower the growth and the darker the blue the higher the growth. This chart is my personal favourite in the report due to the striking colour code making it very easy to grasp the bigger picture.

**3.1** The above graphic represents the average growth per country across all sectors in the year 2015. The green circles represent growth and the red a decline. The larger the green circles the larger the growth and the larger the red circles the larger the decline. There is also a key to the right which is interactive letting you select all the green or all the red for clearer viewing.

Chart, bubble chart

Description automatically generatedGraphical user interface, text

Description automatically generatedChart, box and whisker chart

Description automatically generated

**4.0** For this next section I created two new tables, one containing the maximum growth for a specific set of countries and the other a maximum decline for the same set of countries. To the right is the maximum growth table and below is a clearer maximum decline table. These tables take two string values and a decimal value. To get these decimal values I used Excel to format the percentage signs and turn them into decimals so that MySQL could process the data correctly. Furthermore, the specific set of countries were selected so that there were two from each continent. Breaking the data down into smaller samples can really give an additional layer of detail to go into country specific information.

**3.5** This graphic represents the average growth per country across all sectors in the year 2019. This chart is a box and whisker plot. This chart is unique as it displays the median growth rate with the upper and lower hinges and whiskers. The median value here actually shows a decline in growth rate in 2019. The pink circles are all the positive values and the blue the negative. If you hover over one of the circles the graphic will instruct you which country it represents, the further the circle is from the centre the more, or less growth the country has incurred.

**3.4** This graphic represents the average growth per country across all sectors in the year 2018. This chart, is probably the most visually unattractive, however still serves a purpose. The red bubbles are all countries which have had a decline and they yellow are all ones which have had growth. The larger the bubble in each colour the greater or lesser growth there has been. As shown in the picture by hovering over the graphic there is a list of information showing which country it is, whether it has experienced positive or negative growth and the percentage of such growth or decline.

Graphical user interface, text, application

Description automatically generated

Map

Description automatically generated

Map

Description automatically generated

**5.0** These sections first graphic above is a copy of the first graphic however it is represented using a different tool. This is a five-year average where the larger the circles on the map the more growth the nation has experienced. The reasons being the same as the first graph. To the right is a zoomed in look at this map covering the European regions, the further west you go the larger the circles. Eastern Europe has traditionally suffered economically especially since many of these nations were run by the Soviet Union, a communist regime. Since the collapse of the Union these countries have had to build themselves up which is of course a tricky task especially since their growth has been hindered by a central economy for so long, therefore they are several steps behind western Europe.

**Chart, bar chart

Description automatically generated5.1** Moving on, the above graphic is a bar chart of the average growth per sector throughout the five years, this is a global average and therefore represents all the nations averages. The bars to the left represent industries which are in decline, and to the right are ones that are experiencing growth. Both sides of the chart fit in a range of around 4%, this means that there aren’t any huge dramatic changes to the labour market sectors such as a 10% or more shift, so in some ways this could be a reasonably stable world market. Beginning on the left the professional scientific and technical industry has show the biggest decline of around 4%, the reason for this could be multiple factors, over saturation could be one meaning there are too many individuals in this sector to fill the jobs therefore people are deciding to move to other sectors, another reason could be that governments are shifting there means of production to other industries to fulfil their economic goals. Information and communication gas also suffered a slight drop, this is surprising as the technology age is upon us and jobs in this industry are booming in western nations, this however is a global average, and these jobs are clearly not in huge demand in every nation.

**Chart, bar chart

Description automatically generated**To the right there are many industries experiencing healthy growth. Firstly, mining and quarrying has seen a small growth, this growth could be to meet the demands of global population increase where we essentially need to ‘build more stuff’, so having the minerals to make more things is essential. This leads on nicely to the largest growth, which is manufacturing, as stated previously we need to make more goods, equipment, vehicles, and infrastructure just to name a few. Nations such as China have high growth in manufacturing, due to global advancement and availability for global trade China has benefited from exporting goods at a low cost, more and more goods are being exported as the ease of buying due to technological advancement such as internet use and transportation efficiency are making this possible. Art, entertainment, and recreation is also showing solid growth. I would image growth in this industry would be in the nations who have a more relaxed political system rather than focusing all its efforts solely on achieving maximum efficiency and productivity. Finally, the finance industry shows a good level of growth, this could be due to the ever-increasing number of laws and legislation.

**5.2** The above chart shows the growth rate in relation to income bracket over the five years. To the left represents a decline in this income bracket jobs and to the right represents an increase in this income bracket’s jobs. This chart is very telling, showing huge swings in the overall range. Jobs with a high income are significantly increasing over the other incomes, this meaning that there are more people entering the market with a very high skill set, as the greater the skills you have the more you get paid. This huge growth also means that there are many job openings where businesses are willing and able to offer this competitive pay, these industries are often ones in demand such as the technology and IT industry where high wages are supplied.

Map

Description automatically generatedOn the other hand, those at the lower end of the spectrum may suffer, jobs with lower middle and low income are on the decline. Individuals from countries which are historically poor will be further punished as these individuals are often forced into lower paying jobs due to unavailability if education and lack of investment n growth industries, this means that those countries may continue to suffer. Technological advancement has also replaced many low-income jobs, this is particularly evident in manufacturing automation as well as advanced machinery in manual jobs to reduce the need for human labour. This graphic certainly fuels the trend that those in the west will remain in the high growth category whilst the rest will likely continue to suffer.

**Table

Description automatically generated5.3** Building on the previous two graphs, this map shows the average job income bracket per nation. The map is measured in four sections ranging from high income to low income, high income being in the dark blue and low income being in the red. Just like previously the West including nearly all of Europe is in the dark blue category, therefore the most common category for income is high. The measure is clear to see that geographically the top and bottom of the northern and southern hemisphere are both dark blue the closer the map then moves towards the equator the lower the income becomes. The lowest of incomes are in the centre right of Africa. These nations suffer from almost all the negative issues we have discussed in this report, whether that be water shortages, political unrest or over population. Over population must be considered for issues in the labour market as there aren’t always enough jobs to go around, this meaning that countries with high population and without the economic structure to accommodate that will suffer from unemployment issues. Unemployment will naturally cause the income bracket average to fall and cause labour market growth to decline.

**Map

Description automatically generated6.0** This next section will focus on a handful of specific locations, giving us a smaller sample size and greater scope for analysis. Twelve nations were picked, two from each continent, this giving us a good range. The above table shows these fourteen countries and each of their respective industries growth or decline rates, the colour code moves from blue to red, blue being growth and red being a decline. The purpose of selecting countries in different regions of the world will help to give further evidence to previous arguments describing the roles geography, politics, and wealth play in the conditions of the labour market.

**6.1** This map represents the highest growing industries in the nations shown in the table above. This map varies greatly across five of the six industries suggesting that growth is not just in one sector. The circles on the graph are colour coded depending what industry they represent and are scaled in size depending on the extent of the growth, the bigger the more growth.

North America- The United States and Canada both have high growing industries, represented in the size of the circles. Both nations have highest growth in office-based jobs, in the financial and information and communication sectors. These industries often require university education and provide high wages, this furthers the argument that the West benefit most from the global labour market.

South America- Argentina has the highest growth in arts and entertainment, this is perhaps drawing on Argentina’s and South Americas rich culture. Venezuela is also represented in this chart however actually suffered a decline in their best growing industry, this is a sad indictment on the economic instability in that nation, like Argentina however arts and entertainment was the industry that suffered the least.

Europe- The United Kingdom has one of the highest growing industries in the financial sector, just like the USA this role requires lots of education and is office based. To the east of Europe, we have Poland which tells a different story, this nation has its highest growth in manufacturing, this suggesting that Poland is a very industrial country, becoming industrialised is one way Poland steered its way after Soviet rule so its no surprise that this industry continues to grow.

Africa- Morocco also has its highest growth in the financial sector, this growth however is smaller in comparison to the West. Nevertheless, this is a great sign that Morocco has diversity in its labour market. Mozambique however has its highest growth in mining, African regions are well known for their rich underground resources, ranging from diamonds to cobalt used in batteries, this explains why this nation is capitalising on these resources.

Asia- Japan surprisingly has the highest growth in mining, Japan is a small country with a large population therefore having the land and area to have such growth in mining is a shock. Furthermore, Japan is well known for its manufacturing so that not being the highest growing industry is again surprising. India’s highest growing industry is arts and entertainment, this growth is small however but industries such as Bollywood are huge in these nations.

Oceania- Like other western countries Australia sees its largest growth in the information and communication sector, this consisting of IT related jobs which require good education and provide high pay. New Zealand has its highest growth in mining, New Zealand is rich in many resources such as coal, silver, and iron ore, therefore they are clearly capitalising on their natural resources.

Map

Description automatically generatedOverall, the trend suggests that western countries including Australia are having the highest growth in office based highly educated jobs. Other countries such as Mozambique and New Zealand are capitalising on their natural resources as well as India and South America building on their well-known cultures. Each nation’s highest growth industry builds upon what resources they have, that may be education, natural resources, or culture.

**6.2** This map represents the lowest growth industries in the nations shown in the table above. This map varies greatly across five of the six industries suggesting that decline is not just in one sector. The circles on the graph are colour coded depending what industry they represent and are scaled in size depending on the extent of decline, the bigger the more the industry has declined.

North America- North America has only small circle sizes, meaning that there isn’t any drastic decline in any industry, this being a good sign of a stable economy. The United States has seen it’s the largest decline in the mining industry, many western countries tend to import a lot of their resources from nations such as China due to the significant cost cut, therefore need for this industry is less. In Canada arts and entertainment has seen a very small decline in arts and entertainment, the reason being not that it is failing more so that other industries are flourishing.

South America- Venezuela has the largest circle on the map with a huge decline in the information and communication sector. This could be because individuals who possess those skills are relocating to different countries for greater pay and opportunity. Argentina has seen a decline in the professional, scientific, and technical industry which could be due to the same reason as above.

Europe- The United Kingdom, like Argentina has seen a decline in the professional scientific and technical industry, this could be because of greater incentives in other industries. On the other hand, Poland has seen a decline in the arts and entertainment industry, this is because Poland is an industrial nation and industries which don’t contribute to production are generally not seen as that important.

Africa- Morocco has a large decline in the arts and entertainment industry, one reason for this is that Morocco is a developing nation and is transitioning into more office-based roles as suggested in the previous graph, rather than entertainment. Mozambique also has seen a decline in the professional scientific and technical industry, this again could be due to people with these skills choosing to relocate for more favourable wage and stability.

Asia- Japan has a very small decline in the financial industry, just like the West this small circle suggests that the economy is stable, therefore this decline could just be due to greater incentives in other industries. India has a high decline in the information and communication sector, this is likely to be due to relocation reasons as previously explained.

Oceania- Both Australia and New Zealand have a very small decline in the arts and entertainment industry, as we know the small circle suggests a stable economy, therefore this industry may not be suffering, it may just be growing at a slower rate than the others.

Overall, there is a clear trend that the arts and entertainment industries are showing the biggest declines globally. Many nations are showing this trend perhaps due to natural evolution of the labour market, entertainment such as theatre and even cinema are declining due to online entertainment taking over, this reduces the number of jobs for in person entertainment. Highly educated jobs in poorer countries are also declining, this will most likely be because individuals are relocating to better paying nations to provide their labour. Finally, the traditional western nations all show small decline in the weakest industry rather than volatile drops, this insight further suggests that these countries are more economically stable that the rest of the world.

The aim of this project is to understand the different aspects of the labour market regarding each individual country, in which using different tools to gain insight on how Geography, Politics and Wealth play a role in the labour market globally.

**7.0** In conclusion the objectives set out in this project as shown above have been met. Each section has been addressed, geographically we found out that the West and the lower southern hemisphere including Australia and New Zealand are all constant in having stable growth across the labour market. This stable growth comes with higher pay than the rest of the globe and the type of growth is mainly focused on highly educated roles. On the other hand, we find that countries located across the equator suffer much more than the other nations, environmental issues such as sparce resources and droughts all play a role in poor labour market growth. Politically nations with a long history of democracy are the ones which are benefitting the most, this is due to there being a free market. Those under a dictatorship or communist regime struggle due to proper economic freedom, furthermore those who have moved on from these political states also struggle with instability due to lack of direction and sometimes war. Countries which are historically wealthy also show the greatest growth rates, this is because they can invest in methods to keep a labour market stable, such as spending in education. Poor countries, especially in African regions don’t have good standing in labour market growth, this is because they don’t have the correct economic structure and spending to generate incentives and resources to keep the labour market growing.

This project used an array of tool, the two main ones being MySQL and Tableau. MySQL was extremely useful for importing the data I needed and creating different tables to structure this data. MySQL was also useful for querying the data to get things such as averages so that I could use this queried data to create additional tables which helped to create concise insight on different topics. Tableau was the main tool for the visualisation of this data, many different formats of visualisations were used ranging from maps to bar charts to even box and whisker plots. Tableau is a fantastic tool which helped me to visualise the data clearly and covered many different perspectives to create a greater level of insight into understanding the range of data.

My hypothesis is that in the western world there is more growth in the market, particularly in technology related jobs, seeing the phasing out of sectors such as manufacturing and mining. I also believe that developing nations such as China will have solid growth in the labour market in all aspects related to gaining maximum output rather than industries such as art and entertainment. Finally, I believe that countries who often suffer geographically and politically such as African nations will also struggle to show any signs of labour market growth.

My hypothesis above was very accurate. There was a clear divergence between the West and the rest of the world. The West also have the highest growth in desk-based roles and those that require higher education, whereas poorer nations are more likely to focus on manual jobs. In terms of developing nations, the data I created was somewhat conflicting, some of the developing nations are still struggling to gain real growth in all industries and especially the ones that are considered highly technical in the technology era, perhaps more depth on those nations such as China, India and Brazil would have provided greater insight on this topic. Finally, my hypothesis on those nations who suffer geographically and politically was unfortunately correct, as these conditions put significant strain on growth and maximum strain on instability.

This report was created to identify the condition of the global labour market. This report will be useful for government officials all the way down to just the individual. From a government perspective this report provides information on the macroeconomic economy and therefore governments can understand the strengths and weaknesses of different economies, these can be exploited to boost a nations own stance or nations could help others grow by increasing trade and aid to those who are struggling. Government officials can also look at this report to understand their own labour market and monitor what the growth and declines of different industries, in which creating macroeconomic policy to increase stability. An individual may also find this report useful, if you have a particular set of skills you may look at this report to understand which nations cater to your skills, for example if you are from a struggling nation and have aspirations or skills to work in IT you may chose to move to a western nation to fully optimise on these aspirations and skills, vice versa you may work in a western country and have skills in art and entertainment and chose to move to perhaps South America to optimise on these skills. This report can also help young people or those looking for a career change to make decisions. If you live in Canada and are wondering what to study at university reading this report will give you a greater idea of what industries are booming and therefore which industries, you are most likely to get a job and to get a good salary.

I believe that this report was successful in achieving its objectives and provides value to anyone who has interest in the global labour market.