Contributions of the Small and Medium-Sized Enterprises in the United States

Economy growth, job creation and population health

Raghad Alotaibi

Introduction

Small and Medium-sized Enterprises (SMEs) make up the majority of businesses around the world. The SMEs in the United States comprised 99.9% of all firms in 2006. It is defined by the U.S. Small Business Administration's Office of Advocacy as the enterprises with fewer than 500 employees (U.S. International Trade Commission, 2010). The aim of this visualization is to explore the contributions of SMEs to the country's economy and employment in addition to discover the relation of some sectors in improving the well-being of the population.

Dataset

The businesses datasets are from the United States Census Bureau website. It provides data on different topics, such as health, population, education, businesses and economy. The bureau implements many surveys and programs one of them is the Statistics of U.S. Businesses (SUSB) program, it is a series that is issued yearly on the distribution of economic data by enterprise size and industry. The datasets cover the years from 1997 to 2016 with a separate dataset for each year.
The datasets include attributes of the enterprises' sectors and number of employees, as well as it is divided based on the national and the state levels.
The datasets can be found in the following link: https://www.census.gov/programs-surveys/susb/data/datasets.All.html

The Gross Domestic Product (GDP) annual growth percentage data and the Jobs data are from the World Bank website. The website contains global development data and indicators in different periods of time.

The GDP annual growth percentage dataset can be found in the following link: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2017&locations=US&start=1997

The required indicator from the Jobs dataset is the unemployment percentage of total labor force. The dataset is available in the link: https://datacatalog.worldbank.org/dataset/jobs

The child mortality data is from the global health observatory data repository on the World Health Organization (WHO) website. The global health observatory includes worldwide health statistics as well as publishes analytical reports on priority health concerns. The link for child mortality dataset: http://apps.who.int/gho/data/node.main.ChildMort-1?lang=en

Process

The programming language used to generate the data visualization is python and the plotly library. The SUSB datasets are in txt format and I converted them to CSV format after importing them in EXCEL to be easier to read as pandas data frame in python. For each year I have summed the number of all enterprises with less than 500 employees over all industries then I have stored them in a new data frame called visData. Next, I calculated the annual percentage change in number of SMEs for each year and add it as a new column. The year 1997 will not have a percentage change value because there are no data available for the previous year therefore it was removed.

The GDP annual growth rate data is downloaded as a CSV file and then I obtained the united states GDP growth rate for the same period of years, and added it as well to the data frame. These two datasets were used for the first chart in Figure 1.

The unemployment percentage in the United States for the same eighteen years is from the Jobs dataset, it represents the share of the labor force for both male and female genders who are without work and seeking employment. This data is used together with the SMEs data in Figure 2.

After that, I grouped the SMEs by sector and I chose 3 sectors to compare their number over time. The sectors are: educational services, manufacturing, and health care and social assistance sectors. First, I removed the duplication in the educational services sector data from the year 2002 until 2016, then for each sector I added all the enterprises with less than 500 employees and repeated this prosses for all the years from 1998 to 2016.

A health care indicator is used to assess the health care and social assistance SMEs performance in the country, this indicator is the number of deaths of children under five years old. The data is imported from the WHO website for the United States country and for the same years.

Result

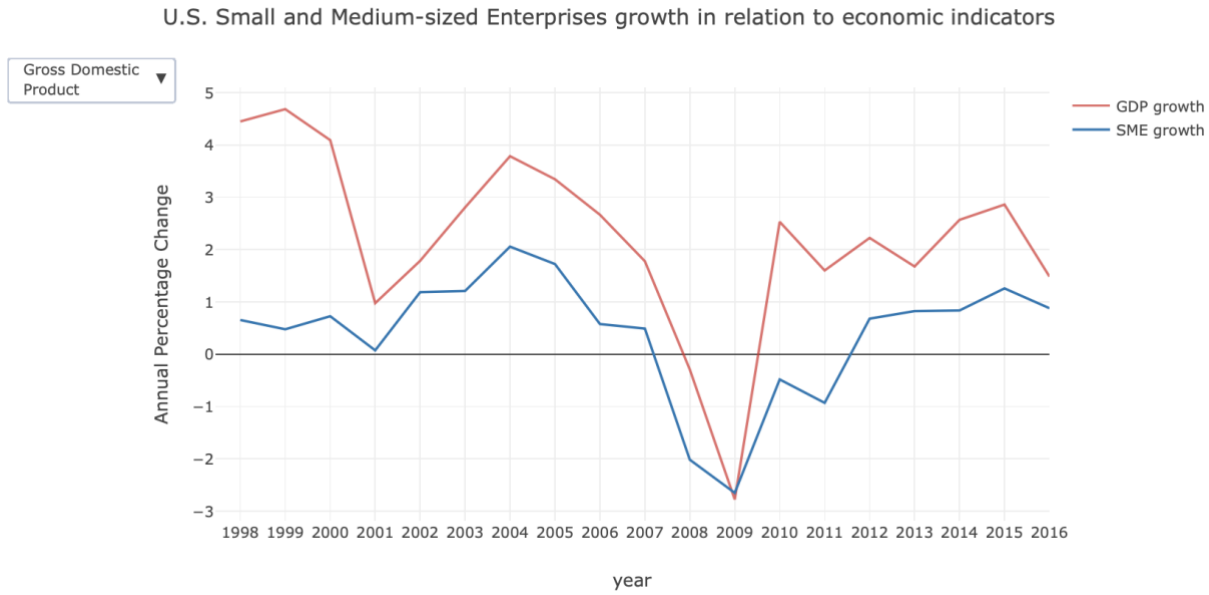

Figure 1. U.S. Small and Medium-sized Enterprises growth in relation to economic indicators.

This chart shows the influence of the Small and Medium-sized Enterprises (SMEs) on the Gross Domestic Product (GDP) in the United Sates from 1998 to 2016. The annual percentage change in numbers of SMEs is directly proportional to the percentage change in the GDP. From 2007 the change in SMEs number started to drop to its lowest in 2009, impacting the GDP badly during the financial crisis period in the country.

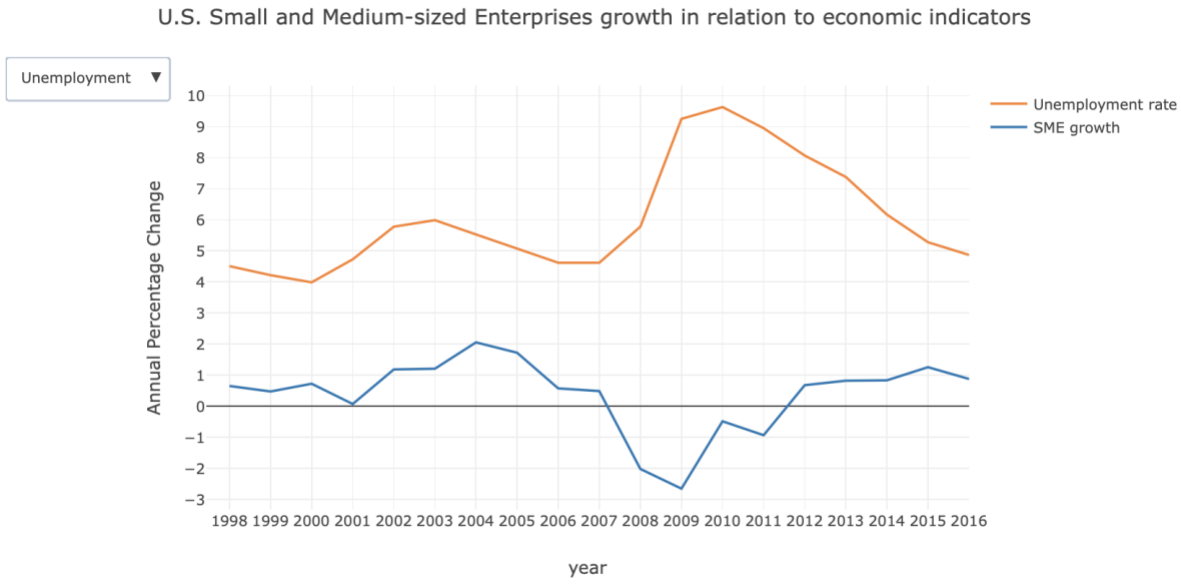

Figure 2. U.S. Small and Medium-sized Enterprises growth in relation to economic indicators.

The line chart in figure 2. illustrates the percentage of unemployment in the United States with the change in numbers of SMEs over the years. There is an inverse relationship which indicates the promising impact of SMEs in reducing unemployment rate. In 2009 the unemployment percentage was high when the SMEs declined to its minimum percentage. The unemployment rate decreases steadily year by year while the SMEs number increases. According to the Census Bureau's Statistics of US Businesses, the small businesses created 1.9 million net jobs in 2015.

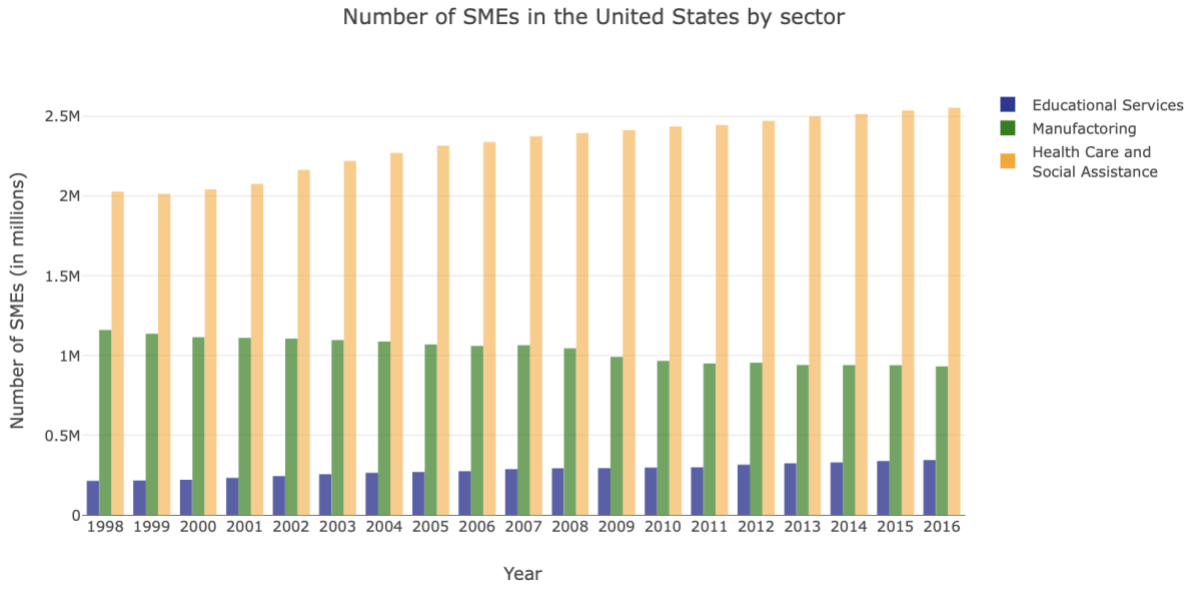

Figure 3. Number of SMEs in the United States by sector.

This bar chart shows the distribution of SMEs by sector. Three main sectors were selected based on their importance to the life quality and development in a country. The health care and social assistance sector is distinctively having the highest number of SMEs between sectors and was growing each year by an average of 1.28 percentage change rate. Whereas the manufacturing and educational services sectors changed steadily with time progressing. The color scheme type used for this chart is the qualitative scheme to show differences in SMEs categories.

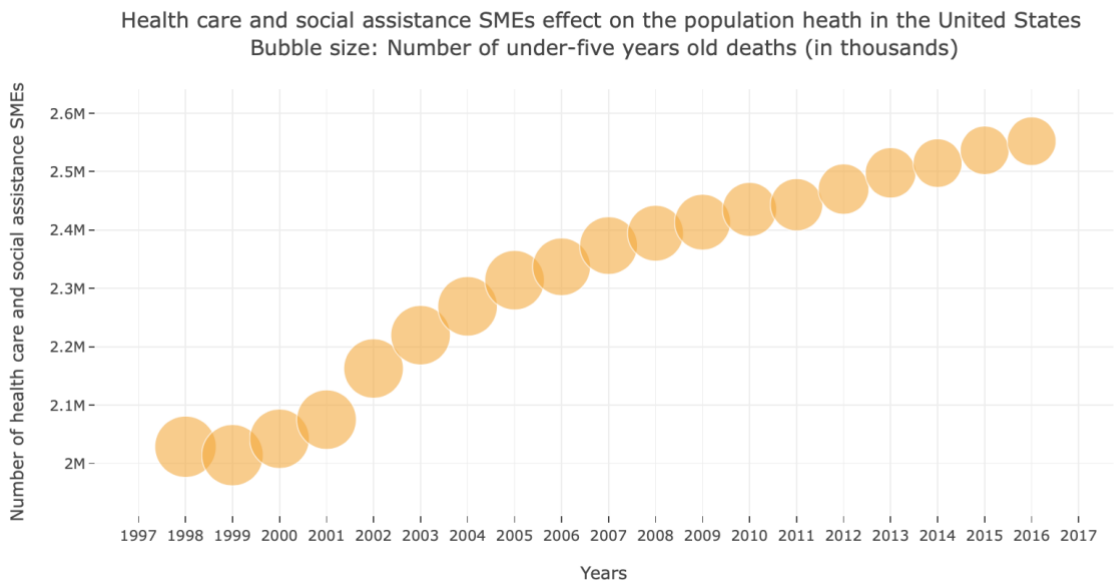

Figure 4. Health care and social assistance SMEs effect on the population heath in the United States.

Since the health care and social assistance sector in figure 3. had the maximum count among the other two, a further analysis is performed on the health care SMEs' performance in the United States using a population health indicator. The bubble chart represents the number of health care and social assistance SMEs and the bubble size indicates the number of deaths under five in thousands. The chart shows that under five mortality number decreases as the number of SMEs increases over time. The North American Industry Classification System (NAICS) classified the health care and social assistance sector as industries like physician's offices, hospitals, medical laboratories, nursing homes and child and youth services centers (Executive office of the president office of management and budget, 2017).

The same orange color for the health care and social assistance sector from figure 3. is used for the bubbles. Visualization in figure 4. needs to have a scale of 0.1M on the y axis to deliver its message, otherwise it will be clustered and partially not visible in the jupyter notebook platform. Therefore, the y axis dose not start from zero.

In summary, the SMEs have the main share of all businesses in United States, and its benefits are clear to the economy. In this report, SMEs' influence on economic development was evaluated by exploring the relationship with the GDP growth and unemployment rate in the country. The SMEs showed a strong positive association with the economy improvement in the United States and helped creating more employment opportunity as they rise in numbers every year. Giving its importance, the U.S. government is focusing on facilitating the establishment of businesses. In 2016, it ranked seventh between 189 countries on the ease of doing business index, which targets the regulations involved in setting up and operating a business (World Bank Group, 2016).

References

Executive office of the president office of management and budget. (2017). NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM United States.

US International Trade Commission. (2010). Small and medium-sized enterprises: Overview of participation in US exports. *Investigation No332-508*, *91*.

World Bank Group. (2016). *Doing Business 2016: Measuring Regulatory Quality and Efficiency*.