

The relationship between number of H1b case and economy

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1 Introduction

As an international student, I am curious about why there are many companies provide sponsorship in some states, such as California, while relatively fewer companies do so in some other states. What are the factors impact the H1b submission number? What are the factors impact the willingness of providing sponsorships? By taking the opportunity to do this problem set, I want to do some preliminary research.

The economic level definitely is an important factor. The better economic development, the more companies will hire more people for business expansion, bringing more opportunities to international students.

Furthermore, the number of firms is likely another explanatory variable. If we assume the average demand for international students is the same across states, the more companies mean the greater total demand.

2 Data

Therefore, I want to choose the number of H1b submitted cases as the dependent variable and the GDP and firm number as the independent variables to build my baseline econometric model. The data resources of these variables are as follows:

Number of H1b submission: OFLC Data (United States Department of Labor)

GDP and growth rate: BEA Data (U.S. Department of Commerce)

Firm number: SUSB Data (United States Census Bureau)

The unit of study is the state of the United States. Although all these resources provide panel data, I only download/import the tables of 2016 for this preliminary research.

I made a histogram to examine the distribution of the number of H1b submissions across states. Figure 1 shows a strong variation.

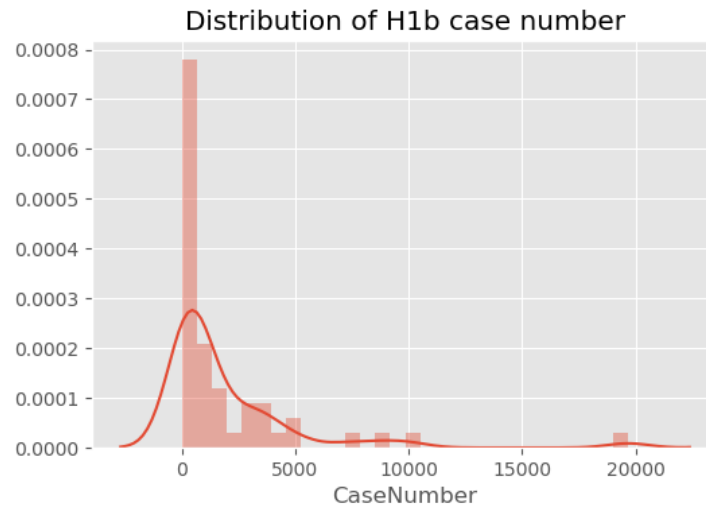


Figure 1: Distribution of the number of cases

Next, I plot a scatter figure and fitted line to get the sense of the relationship between the number of H1b submission and the number of firms. Figure 2 shows a strong positive linear relationship between these two variables.

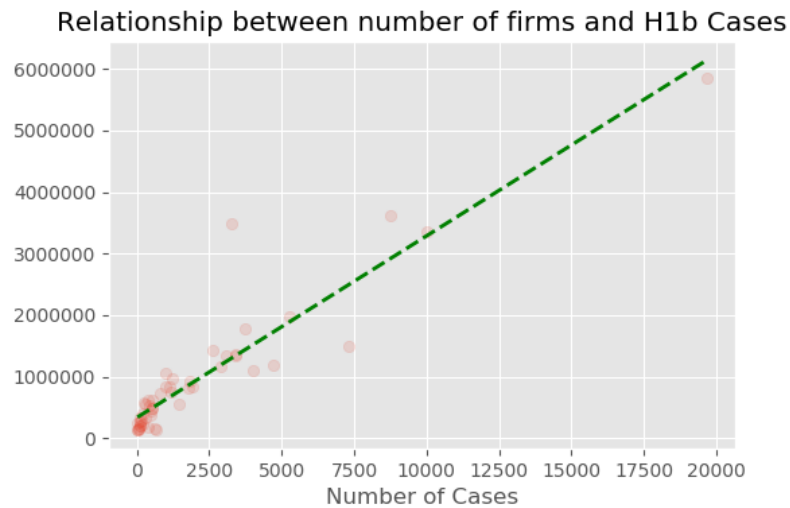


Figure 2: Relationship between number of firms and H1b Cases

Third, I drew a scatter with a fitted line plot to help understand the rela-

relationship between the economy and H1b submission. Figure 3 shows a relatively weak positive linear relationship.

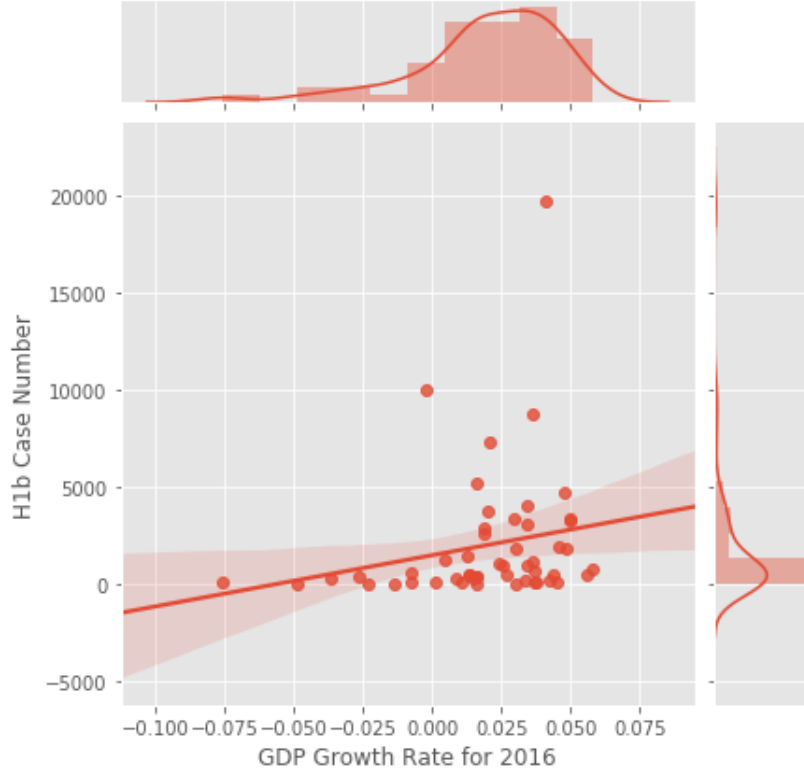


Figure 3: GDP Growth Rate and H1b Case Number

3 Model and Result

Based on the above figures, I decided to use a linear regression model as my baseline econometric model. Initially, the model is as follows:

$$CaseNumber = \beta_1 + \beta_2 * 2016GDP + \beta_3 * 2016GrowRate + \beta_4 * firmNumber + u \quad (1)$$

But I found that it is very difficult to find instruments for this model. To make it easier, I get rid of the two other independent variables and only keep the 2016 GDP. So the model changes to:

$$CaseNumber = \beta_1 + \beta_2 * 2016GDP + u \quad (2)$$

The model shows statistical significance. The next step is to select instrument to run 2SLS to address endogeneity issue.

The first instrument I choose is Education institution number by state from UnivSearch.com. The second instrument I choose is percentage of voting to Democratic in 2016 election from Wikipedia.com.

The 2SLS results show both instruments address the endogeneity issue very well. The both second-stage regression results give us unbiased and consistent estimate of the effect of GDP on H1b case number.

References