Literature Review

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The basic methods of the Gini index and the Gini Coefficients of Education were from the article of Thomas, etc. (2000) [1]. The article introduced the original Gini index function and then later applied the modified function to determine education inequality. The Gini Coefficients of Education have variables including levels of schooling, the proportions of the population with certain levels of schooling, and the years of schooling at different educational attainment levels. The paper employed the education Gini index to measure inequality in educational attainment. Also, the paper presented two methods, direct and indirect, of calculating the Education Gini index. It generated a dataset on Education Gini for population age over fifteen, for 85 countries from 1960 to 1990. The paper took spatial and temporal approaches to the data, and they found that education inequality for most of the countries has been declining during the three decades. The analysis also showed that globally different regions still had significant variances of the Education Gini index. In addition, as they believe that the gender gap is obviously related to educational inequality, from the data point of view, the gender gap has an increasing impact on inequality. Finally, after controlling for the initial income level, the growth of GDP per capita (PPP) is negatively related to inequality in education and positively related to the average years of education of the labor force. [1]

Thomas's analysis provided us a clear guideline of using educational data to formulate the Educational Gini index, and it also provided us some inspirations of using social data such as gender and religion. Moreover, although the analysis didn't use many economic variables, it still highlighted Hello the significance of income and PPP. Geographically, Thomas, etc. only focused on national data. Another paper from Zhang, etc. (2015) [2] concentrated on the educational inequities between rural and urban areas. The paper applied data from the China Family Panel Survey (CFPS) and the Rural-Urban Migration in China (RUMiC) survey to compare the education performance of rural children, children of rural-to-urban migrants, and urban children between 2009 and 2010. The results they got showed that the education performance of rural children and migrants' children is remarkably lower than which of their urban counterparts. The paper mainly suggested that differences in personal attributes such as

nutrition and parenting style would have significant effects on the performance of the children. Therefore, even while the paper provided a regression analysis to explain the educational inequalities between urban and rural areas, the variables for the regression are selected from a psychological perspective. The paper is particularly insightful for policymakers to reduce the educational inequalities between the areas, and the data they collected was also the inspiration for our research since it almost covered all facts about regional education and the reflections from the students. [2]

Unlike the paper from Zhang aiming at both urban and rural areas, De Brauw, etc. (2008) [3] was trying to show that people migrating from the rural areas to the urban areas were more likely to have their children attending higher-level education. It shows that people from the rural areas usually did not choose to attend high schools or colleges because they hoped to use their physical abilities and the chances to work in the urban areas to earn more wages for their family instead of relying on incomes from agricultural production. Another fact was that the possibilities for rural students to attend a good university in China were remarkably low. Therefore, learning knowledge from higher-level education seemed less attractive for most of the students living in rural areas. Moreover, since urban kids were more likely to attend higher-level schools, their families would be more willing to spend money investing education resources, and for rural families, they would just send their kids to work in urban areas to have jobs instead of continuing supporting them to go to high school or colleges. On the other hand, incomes for rural families are also addressed here as an important variable. Since the college tuitions were extremely expensive for some families and the student loans system was not well-established, rural families could fall into poverty when supporting their children attending colleges. Hence, most people migrating from the rural areas to the urban areas would enthusiastically support their children to fulfill their abilities to go to outstanding colleges when these parents didn't have their opportunities to do so. [3]

Regional inequalities in economic growth have been an extraordinary issue in China. Fleisher, etc. (2010) [4] analyzed how regional growth patterns in China depend on the differences in human capital, infrastructure capital, and foreign direct investment. The variances of real per-capita GDP between the wealthiest coastal provinces and the poorest interior provinces are remarkable, and the ratio of the real per-capita GDP between them was 8.65.

Fleisher found that even though the proportion of adults who had at least some senior high school education or above was not shown an outstanding variability for most regions, the proportion of the individuals with at least college degrees in the costal and northeast regions was much higher than the others. The paper stated that educational inequalities are an important part of regional inequality. Since China's economic growth didn't benefit its provinces and regions equally, the paper suggested that the high degree of regional income inequalities and the high degree of education inequalities have an interactional relation. The results of the paper inspire our research to concentrate on variables that could represent the phenomenon of regional income inequalities and other inequalities of economic growth. [4]

Zhang, etc. (2009) were the trailblazers who applied systematically spatial analysis to present the facts on inequalities in education and health care. The paper also addressed that social inequalities had increased "substantially since the reforms and opening-up began. [5] Yang, etc. (2014) applied the Education Gini index from Thomas [1] to demonstrate the scales of education inequalities in China. They calculated it for every four years from 1996 to 2008 for all provinces using data from the China General Social Survey. The table of the Education Gini coefficients clearly showed which provinces had the values below the national one and which provinces had higher education levels than the national average level. Our research intends to use the same data that Yang's paper used but for different years from 2018 till now. The method of showing the table of Education Gini coefficients would also be referred to by our research. Moreover, besides the general spatial differences for the 28 provinces, the paper also included the variables such as gender, hukou (rural or urban), and income, to indicate the potential factors for education inequalities in the nation. Some social facts the paper brought were that rural areas had lower Education Gini coefficient and lower average years of schooling (AYS) than urban, Female had higher Education Gini coefficient but similar AYS than male, groups of people older than 26 in 2006 usually had lower AYS but higher Education Gini coefficients than groups younger than 26. The paper calculated the educational investment as the sum of government appropriation for education, funds from private schools, donations and fund-raising for running schools, income from teaching research and other auxiliary activity, and other educational funds. They got the data from the China Statistic Year Book. For our research, I would like to more specifically focus on only the average educational investments per household, and the government appropriation for education. The paper worked on a semi-log regression model based on OLS to

analyze which factors contributed more to education inequalities. They also used the Shapley decomposition to determine that. Based on the results, they found that hukou and income contributed to education inequalities most. It provides us an insight into highlighting these factors in our research as well. Yang's paper offered us a detailed guideline and a solid installation of the regression model between the Education Gini Index and other economic variables, and from this paper, we would add more variables and machine learning methods to find a more accurate relation between these factors. [6]

Xiao, etc. (2014) drew extraordinary maps to show the inequalities between the two provinces in China. I would take a similar GIS approach for visualizing the data for our research and provide maps to cluster the hotspots of education resources in different areas. [7]

The above references would help us to construct our models and analysis of education inequalities in China. On the other hand, the paper from Van Raajj, etc. (2008) and the paper from Tang, etc. (2017) stated how companies and schools were applying virtual learning to products. Van Raajj published the paper in 2008 when people in China were not adapted to developing computer technologies in education and showed the anxiety people had when learning from an unfamiliar system. [8] Tang's paper more directly aimed at how virtual learning could create more educational resources and help people, especially migrant workers, to satisfy their demands of educating themselves on their electronic devices. [9] These two papers would help us to develop a hypothesis on whether popularizing virtual learning could reduce education inequalities and how.

References

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