

Hukou and Urban-Rural Educational Inequality: Who Are Left Out?

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Abstract: This paper examines how Hukou type and years of education affected urban-rural divide in China after 2016. Using statistics from the 2016 China Family Panel Survey and the 2020 China Statistical Yearbook, five alternative dimensions of the relationship are identified: Age, gender, parents' years of education, regional education expenditure, and siblings. Assisted by regression models, the report compares the extent of each factor's influence on educational attainment with Hukou type. In addition, this paper builds on previous findings of similar work by considering some important macroeconomic changes after 2016, including the Hukou reform and the abolition of the one-child policy in 2016. The study concludes that educational participation in China was primarily dependent on the location (whether rural or urban) where individuals lived and participated in compulsory education. This indicates that the Hukou system entails a significant degree of discrimination and division. It is an institutional barrier to educational opportunities and resources for certain groups (i.e. rural Hukou holders).

Keywords: Hukou system, Inequality, Urban-rural, Education.

1. Introduction

The impact of regional disparity on the education industry is a prevailing research area that numerous scholars have examined [1]. As it applies to China, the Hukou system (Household Registration system) enforces rural-urban inequality through the legislation, denying most rural Hukou holders' access to quality education services as opposed to their urban counterparts.

1.1. The Hukou System

Hukou, or the House Registration System, is an instrument used to identify a person's permanent residence. The Hukou system has historically segregated rural and urban Chinese. In the era of Mao, residence permits were used to determine people's occupation scope and forbade inter-travelling between urban and rural areas. Since reforms in the 1980s, restrictions on migration flows through this system have disappeared. However, access to local government benefits is closely linked to Hukou type. As a result, Hukou continues to dictate in which district, city or region a Chinese individual has access to a whole range of local public services, such as pensions and public education.

During the Fourth meeting of the Thirteenth National People's Congress in 2021, officials pledged to ease regulations with the interest of promoting urbanisation, a step claimed as vital in "driving

national economic growth” [2]. Nevertheless, the restrictions of the Hukou conversion continue to deter many rural migrants from moving to urban areas. In many major cities in China, there are four ways to acquire a local Hukou: investing in a local business, paying social insurance continuously for more than five years (comprises 40% of monthly income), buying a house, or holding a degree beyond university [3, 4]. However, these requirements are generally out of reach of migrants, who struggle with living beyond subsistence [5]. Worse, ease of conversion is further impeded by its hereditary nature, as the status of parents are passed down to their child when the child is born [6]. These insurmountable obstacles have made intra-Hukou and even inter-Hukou mobility an almost-herculean task, contributing to the limited number of successful transitions from rural to urban Hukou.

1.2. The Hukou System & Educational Inequalities

The educational system in China is rife with urban-rural inequalities, owing to the discriminatory effects of Hukou on educational resources and opportunities. In many cities, migrant students without local Hukous are excluded from the Nine-Year Compulsory Free Education [7]. Most state schools receive no state funding for migrant pupils, so they often claim to be full [8]. As a result, migrant students must either attend private institutions or return to the village linked to their Hukou status where they can receive a free but bare-bones education. Such schools usually face a shortage of qualified teachers (Fig. 1) and necessary educational resources.

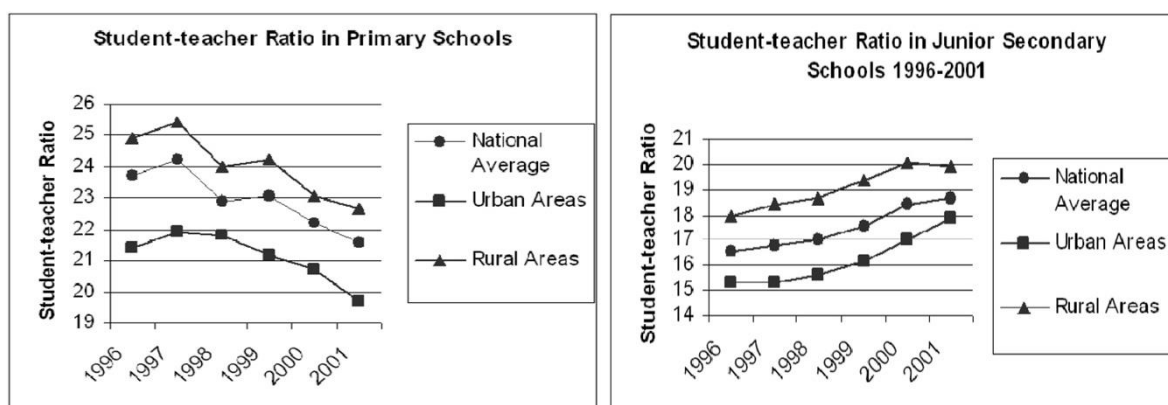


Figure 1: Skewed student-teacher ratio between urban and rural schools in China [9].

Students’ educational attainment can reflect such disparities between rural and urban holders. Research has shown that the proportion of rural students at China’s 985 Institutions (the top 1%) has shrunk [10]. Only 0.99% of rural university students enrolled in them in 2015, compared to 1.36% in 2008; Whereas urban ones increased from 2.99% in 2008 to 3.1% in 2015. A prominent contributing factor in the allocation of hospital places is that the top institutions are found in the largest and wealthiest cities, creating a monopoly over places by local students with the respective Hukou. Peking University and Tsinghua are the most prestigious universities in China and they are situated in Beijing. According to state television, their acceptance rate is around 1% for local students, which is 10 times higher than that for students applying from foreign residences beyond the capital [8].

1.3. Research Objectives

A myriad of studies on the topic of Hukou and urban-rural educational inequalities has been done previously. Since the years of education are a direct indicator of one’s educational accomplishment,

the highest attained level of education by an individual, a useful exercise would be to understand how Hukou status is driving this factor [11].

The paper is organised as follows: Chapter 2 of the paper will review past studies relevant to the topic of this research and identify potential gaps to be filled in; the model and approach of the research will be illustrated in Chapter 3; Estimation results will be displayed in the first part of Chapter 4, and further analysis of the results is given in the following part; Finally, the conclusion and future research are in Chapter 5.

2. Literature Review

There exists a large quantity of papers on the regional disparities in the Chinese education system. The literature is comprehensive and categorised into three main sections: Hukou & unequal access to schools, unequal access to educational resources, and a completed research paper analysing a similar topic. However, this literature can be supplemented further, which will be highlighted in subsequent chapters.

2.1. Unequal Access to Elite Schools

A significant correlation exists between one's Hukou type and enrollment into prestigious institutions. Li and Loyalka [12] underscored the stark difference in admission rate between rural and urban applicants: students with urban Hukous are 8 times as likely to enroll in tertiary education and 12 times as likely to enroll into elite Project 211 colleges compared their non-urban counterparts [12, 13].

However, since this research focuses on the impact of Hukou type on an individual's years of education, analysis on education quality considered in depth and shall be referenced only as appropriate. Therefore, more findings on the relationship between Hukou and years of schooling, a more direct indicator of educational attainment, is required.

2.2. Unequal Access to Educational Resources

Liang and Chen [14] shed light on why children who migrated and do not have local Hukou in their current place of residence are not eligible for free education stipulated by Chinese law [14]. Since public subsidies for mandatory education varies greatly by region and it is not transferable from city to city, the government's expenditure per capita increases when rural migrants move to the city seeking more educational opportunities. Therefore, rural students are often excluded from such provisions.

County and township governments' inefficiency and lack of negotiating ability with authorities (prefectural governments, provincial governments, and the central government) serves as a prominent reason for limited concentration of educational resources in rural areas vis-a-vis urban areas [15]. Consequently, there exists a trend that local governments shift the burden on providing education to the rural peasants, mainly in the form of tuition fees and miscellaneous fees [16]. However, these education surtaxes often place an unbearable financial burden on rural residents already earning one-third that of urbaners. This forces many rural students to drop out and work early, severely shortening their years of education.

Unequal allocation of educational resources between rural and urban students is a direct cause of the disparities in their completion of education. Therefore, examining regional expenditures on educational resources is relevant to this research topic and will be discussed extensively in the subsequent chapters. Other data associated with supplementary education like private tuition will not be part of the discussion given the current implementation of the Double Reduction Policy, which seeks to effectively ban all after-school training classes [17].

2.3. Hukou System and Migration in China [18].

Guo [18] studies the relationship between the Hukou system and the individuals' years of schooling. He drew sample data from the China Family Panel Studies (CFPS) from 2010 to 2012 and created a model, which this paper will extend and improve on [18]. More details regarding the model and adaptations will be discussed in Chapter 3.

Gao failed to provide evidence on the effects of Hukou type on the years of education one receives in recent years. Notably, China's gross domestic product (GDP) increased by 140% from 2010 to 2020, increasing regional investments in education as a result. Since the Hukou system was reformed in 2016, together with the concomitant socio-economic change paralleling China's rapid economic growth, an up-to-date empirical examination of the Hukou system's impact on years of education is warranted. Thus, this research contributes to the literature by addressing the question mentioned above: the relationship between Hukou type and years of education in the context of inequality under China's rural-urban divide, at a micro-level.

3. Approach & Methodology

This chapter will illustrate adaptations to the model from Guo's study [18]. The first section will explain extensions on the original variables; The second section offers an overview of the sources and data used in the empirical estimation; The third section presents the potential flaws to the model.

3.1. Extension on Model from Hukou System and Migration in China [18].

Guo formulated a model to test the hypothesis that the Hukou type will be an important determinant of years of education. In his model, there are five explanatory variables which include two dummy variables:

$$Edu_i = \alpha + \beta_1 HK_i + \beta_2 Age_i + \beta_3 Gender_i + \beta_4 Edu_{Fa_i} + \beta_5 Edu_{Mo_i} + \varepsilon_i \quad (1-1)$$

In equation (1-1), Edu_i is the total years of education an individual has completed; Edu_{Fa_i} represents the years of education of the subject's father and Edu_{Mo_i} represents the years of education of the subject's mother. Age_i is calculated by subtracting the subject's year of birth from 2014 (the year of publication), based on the assumption that students all enroll in schools at the appropriate age of six. In addition, both HK_i and $Gender_i$ are dummy variables: HK_i takes value one if the Hukou is rural, and value zero if the Hukou is urban; $Gender_i$ takes value one if the subject is male, and value zero if the subject is female.

Based on Guo's model, the following results are obtained (Table 1). All the coefficients are statistically significant. The coefficient for present Hukou is 3.35 for 2010 and 3.22 for 2012, indicating that urban Hukou holders spend three more years at school than rural holders on average.

Table 1: Coefficients of Education and Hukou Model: First column on Years of education shows results from 2010 data, the second column from 2012 data [18].

-	Dependent Variable	
Independent Variable	Years of education (2010)	Years of education (2012)
Hukou type (present)	3.352(0.772)***	-
Hukou type (3 years old)	-	2.367(0.982)***
Age	-0.078(0.003)***	-0.060(0.003)***
Gender	0.799(0.064)***	0.859(0.067)***
Years of education (Father)	0.204(0.009)***	0.241(0.009)***
Years of education (Mother)	0.161(0.009)***	0.196(0.010)***
Adjusted R-square	0.389	0.325

Note: Standard errors are reported in parentheses, “***,” “**” and “*” denote statistical significance of 1%, 5% and 10% level respectively.

However, the adjusted coefficients of determination for both years (0.389 for 2010 and 0.325 for 2012) are relatively low, suggesting a weak relationship between years of education and Gao’s chosen independent variables. Therefore, a stronger explanation for the variance of the dependent variable (i.e. years of education) is needed. In this research paper, the following modifications will be made to Gao’s formula:

$$Edu_i = \alpha + \beta_1 HK_i + \beta_2 Age_i + \beta_3 Gender_i + \beta_4 Edu_{Fa_i} + \beta_5 Edu_{Mo_i} + \beta_6 Invest_i + \beta_7 Sibling_i + \varepsilon_i \quad (1-2)$$

In equation (1-2), Age_i is now calculated by subtracting the subject’s year of birth from 2021 (e.g. if a person is born in 1988, his or her age is 33); Two new independent variables Invest_i and Sibling_i have been added. Invest_i is the amount of regional investment in education (measured in 10,000 Yuan per student); Sibling_i is a dummy variable, which takes value zero if the subject has sibling(s), and one if the subject has none.

3.2. Choice of Variables

Apart from the unequal effect Hukou type has on years of education (Chapters 1 & 2), other independent variables also influence a person’s years of education to varying degrees.

3.2.1. Age

In recent decades, China has made significant efforts to expand its education system to meet its fast-evolving economic and workforce needs [19]. Furthermore, its annual GDP growth has averaged 10%

since its economic reform in 1978, enhancing individuals' financial capability to participate in education [20]. Hence, the younger generation is expected to enjoy more years of education than their precedents.

3.2.2. Gender

The One-Child Policy has improved gender inequality in China: girls who are the sole children in the family were allowed to access greater educational opportunities due to the absence of competition for household resources compared to daughters in multiple-child households, who displayed a preference toward male children due to conventional mindsets [21, 22]. However, the policy was abolished in 2016. Hence, gender inequalities in education are projected to grow again, with more significant disparities in rural areas.

3.2.3. Parents' Education

Parents' level of education has a positive relationship with children's participation in education. Various studies have illustrated that parents' knowledge, expectations, and home education will directly influence children's educational attainment [23].

3.2.4. Regional Expenditure in Education

In China, the lack of funding in rural schools and insufficient state action to provide financial relief for rural students contributes to the divide between educational levels of urban and rural areas [24]. Interprovincial inequality in school funding also increased, widening the gap in schooling years between developed, urban provinces and undeveloped, rural ones [25].

3.2.5. Siblings

Various scholars have deduced an inverse relationship between the number of the children in a household and the quality of education, as more siblings and a smaller age difference between siblings divided the family's resources and reduced the share for each child [26]. Therefore, individuals with siblings are predicted to participate in fewer years of education compared to single children, with the phenomenon more apparent in rural areas with relatively fewer resources.

3.3. Description of Data

Given China's rapid political and socioeconomic changes from 2010 to 2020, including reforms to the Hukou Conversion Policy in 2016, abolition of the One-Child Policy in 2016, and increase in national wealth, more recent data are chosen to keep abreast of these events. This research paper uses the 2016 China Family Panel Studies (CFPS) dataset and the 2020 China Statistical Yearbook (CSY) [27, 28].

The paper uses data from both 2016 and 2020 given the relatively static socioeconomic and political landscape during this period (Fig. 2 and 3).

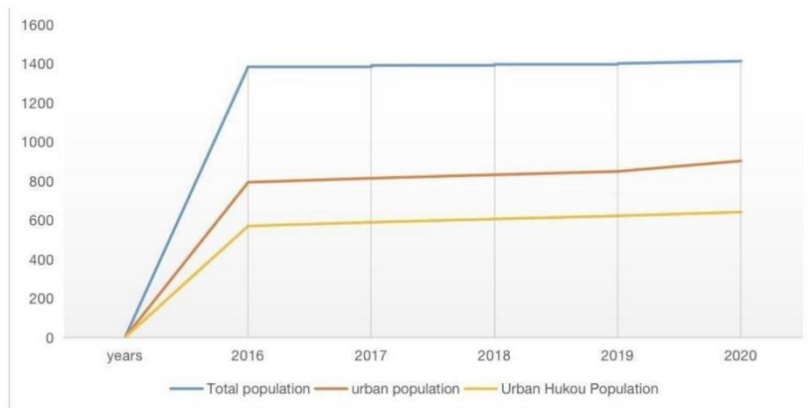


Figure 2: Increase in urban Hukou population vis-a-vis urban population and total population from 2016 to 2020 in China [28].

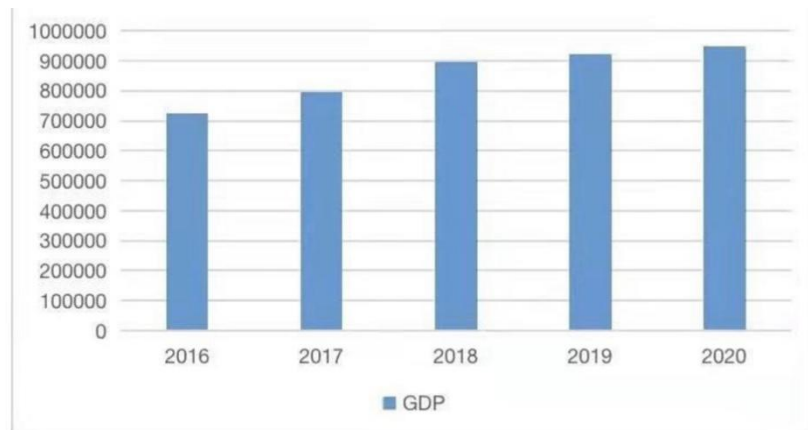


Figure 3: Increase in Chinese GDP from 2016 to 2020 [20].

4. Results

The results in the table below demonstrates the coefficient for years of education and Hukou type in 2016.

Based on the obtained results, the coefficient of the Hukou type was 1.082 in 2016, which states that students with the urban Hukou enjoy approximately one more year of education compared to their rural peers. Hukou type also has the highest coefficient among all independent variables, implying its substantial role in determining the length of education for students. However, this figure is significantly lower than the result of 3.221 obtained in 2012 [18], which demonstrates a decrease in Hukou's influence on years of schooling across time. Hence, it can be deduced that urban-rural educational inequality arises from other major factors.

Table 2: Coefficients of Years of Education (Dependent Variable) and Independent Variables.

-	Dependent variable
Independent Variable	Years of education
Hukou type	1.082(0.023)***
Gender	0.279(0.018)***
Age	-0.012(0.001)***
Siblings (Single child)	0.259(0.019)***
Years of education (Father)	0.211(0.009)***
Years of education (Mother)	0.190(0.012)***
Education expenditure per capita	0.998(0.123)***
Adjusted R-square	0.327

Note: Standard errors are reported in parentheses, “***,” “**” and “*” denote statistical significance at 1%, 5% and 10% level respectively.

Coefficients of other independent variables are also of statistical significance. The dummy variable Gender indicates that males generally receive around 0.3 more years of education than females, which is lower than 1.2 in 2012. Other than that, the results suggest that both parents' education years have a similar impact on their children's years of schooling: one more year of father's education contributes to about 0.2 more years of children's education and an additional year of their mother's education contributes to 0.19 more years of children's education. Furthermore, the coefficient of -0.012 indicates an inverse correlation between age and years of schooling: the younger the subject, the more years of education he or she tends to receive. However, age plays the least significant role in determining years of schooling among all independent variables.

The variable with the second-highest coefficient is education subsidies in the target region. The value 0.998 suggests that every 10,000 Yuan invested in education would increase the duration of schooling by one year. This newly-added variable with a relatively high coefficient might explain why the coefficients for other variables are lower than those in the original formula and emphasise the impact of regional education investment in years of schooling [18]. It is also worth noting that regional investment in education is closely related to the type of Hukou since urban Hukou-holders usually concentrate in regions with more abundant educational resources and funding.

Another notable mention is the factor Siblings, an additional variable to the original formula that indicates whether the survey respondent is a single child or has siblings. The coefficient 0.259 shows that a single child would receive around 0.26 more years of education than children with siblings. This finding aligns with my previous hypothesis that families tend to concentrate more educational resources on one child due to cost concerns.

5. Conclusion

Findings from this study suggest that Hukou status contributes significantly to individuals' participation in education given the presence of China's rural-urban divide. However, the results also observe a decline in Hukou status' influence in the education industry across the years, possibly due to its reformation in 2016. This study is intended to provide directions for future research: more indicators of educational attainment such as enrollment rate into quality institutions and performance during the National College Entrance Examination (NCEE) can be assessed [29]. Furthermore, potential expansions may also include human capital, which can be assessed by measuring individuals' education and income level returns.

There are three limitations in data analysis. First, the R-square value is small (less than 0.5), illustrating a less significant relationship between the independent and dependent variables. Second, owing to the lack of availability of Chinese data, the sources of data for this research are limited and overly generic. For instance, the paper failed to consider more specific factors such as each family's educational expenditure and social status. Third, data samples for the factor Siblings are limited (only 1,000 observations) compared to other variables due to the One-Child Policy, which leads to a relatively small number of households with more than one child. This raises the risk of data bias and inaccuracy in the findings.

Social exclusion of individuals with rural Hukou status has implications on China's socioeconomic landscapes. As educational resources and opportunities tilt towards cities, the human capital of the rural population will decline exponentially with time. These "low-quality" regions will eventually become the bottleneck of China's economic and social development, proving the inefficacy of Hukou's regional division.

References

- [1] Young. (2013) *Inequality, the Urban-Rural Gap, and Migration*. Oxford Academia. *The Quarterly Journal of Economics.*, 128: 1727–1785
- [2] Department of Rural Industry Development (2021). In: *Summary of Responses to the Fourth Session of the Thirteenth National People's Congress*. Beijing.
- [3] CPIC. How much does your endowment insurance cost? <http://www.cpic.com.cn/baike/376.html>.
- [4] Beijing Hukou net. (2021) *Beijing Settlement New Policies*. <http://www.hukoubj.com/jfgd/1976.html>
- [5] Albert Park, Wang Dewen (2010) *Migration and urban poverty and inequality in China*. Institute for the Study of Labor (IZA). IZA Discussion Papers., No. 4877.
- [6] Montgomery, J. L. (2012) *The inheritance of inequality: hukou<.i> and related barriers to compulsory education for China's migrant children*. UW Law Digital Commons. *Washington International Law Journal.*, 21: 3
- [7] China Org. *The eradication of illiteracy in China since the 1990s 9-year Compulsory Education*. <http://www.china.org.cn/english/education/184879.htm>
- [8] *The Economist Newspaper*. (2021) *Education in China is becoming increasingly unfair to the poor*. <https://www.economist.com/china/2021/05/27/education-in-china-is-becoming-increasingly-unfair-to-the-poor>.
- [9] Zhang. (2009) *Disparity between Rural and Urban Inequality in China*.
- [10] Du (2019) *Whose children entered '985' colleges*". National People's University, *Higher Education*. Volume 2.
- [11] Government of Canada, S. C. (2021) *Educational attainment of person*, Statistics of Canada. <https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=85134>.
- [12] Li, Loyalka, Rozelle, Wu, Xie. (2015) *Unequal Access to College in China: How Far Have Poor, Rural Students Been Left Behind?* Cambridge University Press. *The China Quarterly.*, Volume 221.
- [13] China Education Centre. *Complete Guide to China Scholarships*. <https://www.chinaeducenter.com/en/cedu/ceduproject211.php>
- [14] Liang, Chen. (2007) *The educational consequences of migration for children in China*. *Social Science Research.*, 36 (1): 28–47
- [15] Wang (2003) *China's Rural Compulsory Education: Current Situation, Problems and Policy Alternatives*. Chinese Academy of Social Sciences., WP36.
- [16] Qiang, Qiang. (2010) *Educational Inequality under China's Rural–Urban Divide: The Hukou System and Return to Education*. Peking University Press., 42–3.

- [17] *People's Daily*. (2021) *Propagation of the Double Reduction Policy*. http://www.gov.cn/xinwen/2021-08/31/content_5634281.htm
- [18] Guo. (2014) *Hukou System and Migration in China: A new perspective of the effects from Hukou System*. The Ohio University.
- [19] OECD. *Education in China: A Snapshot*. <https://www.oecd.org/china/Education-in-China-a-snapshot.pdf>.
- [20] World Bank. *Overview*. <https://www.worldbank.org/en/country/china/overview#1>.
- [21] Pletcher. (2021) *One Child Policy*. <https://www.britannica.com/topic/one-child-policy>
- [22] Matthews, Nee. (2000) *Gender Inequality and Economic Growth in Rural China*. University of Iowa. *Social Science Research*, 29: 606–632
- [23] Crosnoe R, Mistry R S. (2002) *Economic Disadvantage, Family Dynamics, and Adolescent Enrollment in Higher Education*. *Journal of Marriage and Family*, 64: 690-702
- [24] Ermisch J, Francesconi M. (2001) *Family Matters: Impacts of Family Background on Educational Attainments*. 68(270): 137-156.
- [25] Yang, Huang, Liu. (2014) *An analysis of education inequality in China*. *International Journal of Educational Development*, 37: 2-10
- [26] Hannu, Wang. (2006) *Geography and educational inequality in China*. *China Economic Review*, 17 (3): 253–265
- [27] Becker G S, Lewis H G. (1973) *On the Interaction between the Quantity and Quality of Children*. *Journal of political Economy*, 81(2, Part 2): S279-S288.
- [28] Peking University Open Research Data. (2018) *China Family Panel Studies (CFPS)*. <https://opendata.pku.edu.cn/dataverse/CFPS?language=en>
- [29] National Bureau of Statistics of China. (2016–2020) *China Statistical Yearbook*. <http://www.stats.gov.cn/english/Statisticaldata/AnnualData/>.
- [30] MBA. *College Entrance Examination*. <https://wiki.mbalib.com/wiki/%E9%AB%98%E8%80%83>