Multidimensional Thinking on Educational Equity of National College Entrance Examination in China

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Abstract. Education equity has always been an important issue in the field of education that global education has always paid attention to. Education equity covers many aspects of education and is a core driving force for the improvement and development of education itself. This paper discusses the hot issues and development of education equity from three dimensions: regional equity, family input and education equity, and the allocation of national college entrance examination enrollment plan. At the same time, from the perspective of geographical location observation, this research found a new perspective of fairness, including economy, equality of condition, family background and government distribution. Based on the meta-analysis of existing research results, this paper puts forward views and strategies for in-depth research on how the environment in unequal regions, including the imbalance of economic development and the inequality of education, family investment and distribution plans, affects the equity of China's college entrance examination education.

Keywords: Equity in Education, National College Entrance Examination in China, Household Input, Allocation of NCEE Enrollment Plan, SDG4.

1 INTRODUCTION

In the process of the construction and development of the education system, education equity is always a very important measurement index. It is increasingly acknowledged that unequal in education exists in many countries, thus, equity of education has been widely entrenched in national policy and international human rights. Efforts to realize the Sustainable Development Goals(SDGs) and Education 2030 goal in support of global equity in education are among the core work of UNESCO, however which is paved with challenges (Alcott et al., 2018)1. The items to evaluate the status of education equity include equality of opportunity, equality of conditions, family input and others. Consider educational equity from China's political influence, economic development and ethnicity. In particular, equality of opportunity is regarded as the focus of public attention of educational inequality, that is, every citizen should have equal learning opportunities.

As one of the most standardized examinations, the college entrance examination is regarded as the fairest way to enter into the university. In addition, the college entrance

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examination is a popular admission standard for entering higher education. Only students who are competitive and have high scores can enter China's first-class universities. As a key turning point in students' lives, college entrance examination results have a far-reaching impact on citizens' lifelong social and economic status. Therefore, the debate about the fairness of college entrance examination education has a long history.

The issue of educational equity in China continues to be reformed with the development of society. The national college entrance examination is a very important link in the selection section of the education system, which highlights the current situation of education fairness. Exploring the realization path of educational equity and improving educational equity according to the current actual situation is a subject that needs continuous research. At present, in the context of China's regional development, the economic development of different regions is uneven, and there is a gap in educational financial investment in the eastern, western, central and northeast regions. Local economic development and education financing have different effects on education. In this case, the educational fairness of the college entrance examination needs to continue to be improved. Secondly, family input affects the scores of the college entrance examination to a certain extent. Parents traditionally participate in the education of their children, especially in the preparation for the college entrance examination. Educational investment and parenting style have a certain impact on college entrance examination scores. Thirdly, the reform of the enrollment policy, especially the continuous adjustment of the enrollment policy according to the current actual needs of education, is the most direct force for the reform of educational equity. Regional inequality, family education input and the allocation of national college entrance examination enrollment plan are the prominent issues in the equity of college entrance examination education. Explore the internal relationship between each dimension, and how these three dimensions affect the educational equity of the college entrance examination. Through systematic literature research and meta-analysis based on literature. Realize objective, comprehensive and effective discussion on educational equity.

2 Three dimensions of thinking on educational equity of National College Entrance Examination

2.1 Regional background of educational equity

The People's Republic of China (PRC) has 34 administrative divisions, including 23 provinces, 5 autonomous regions, 4 municipalities directly under the central government, and two special administrative regions. Geographically and economically, China includes four major regions, namely, the eastern, central, northeastern, and western regions. In addition, China established special economic zones in 1980, and then expanded to Hainan Province and 14 other coastal cities (Song et al., 2000)6. China has been strengthening policies to achieve economic equity between different administrative regions and geographical regions (Song et al., 2000)6. Since the founding of the people's Republic of China in 1949, the central government has been committed to equitable development. Today, the gap between regions is gradually narrowing. Due to

certain differences in the basis of the development process, at present, the education gap between regions still exists. Its characteristics are closely related to regional geographical location, economic foundation, and cultural background. This regional difference in education is a global problem, and the relationship between the development of education in development and the improvement of the overall strength of the whole country is more prominent. In other words, China is not the exclusive owner of this global rule (Held & Kaya, 2007)4. It is undeniable that educational equity sprouts from economic equality. If economic equality is not achieved, the road to achieve educational equity will be full of thorns. From the database containing per capita regional gross domestic product (GDP), per capita disposable income, balanced education policy, central government education investment and government economic policy, it can be seen that regional economic disparities will undoubtedly affect education equity.

Unbalanced Economic Development. China, as the second largest economy in the world, has experienced rapid economic reform (L. Song, 2020)[5]. The astonishing development of the economy in China over the last five decades roots in the combination of endeavors. Some phenomena of unbalanced economic development, such as rural-urban economic disparity, and inequality between coastal and western provinces have ardently aroused concerns of unbalanced economic development, rural-urban economic disparity, and inequality between coastal provinces and western provinces have aroused wide concerns from the researchers and the public.

Table 1. 2020 Per Capita Gross Regional Product (GDP) in 31 Provinces of China (Self-drawn).

Region	Gross Regional Product(100 million yuan)	Per Capita Gross Regional Product(yuan)
Beijing	36102.55	164889
Tianjin	14083.73	101614
Hebei	36206.89	48564
Shanxi	17651.93	50528
Inner Mongolia	17359.82	72062
Liaoning	25114.96	58872
Jilin	12311.32	50800
Heilongjiang	13698.50	42635
Shanghai	38700.58	155768
Jiangsu	102718.98	121231
Zhejiang	64613.34	100620
Anhui	38680.63	63426
Fujian	43903.89	105818
Jiangxi	25691.50	56871
Shandong	73129.00	72151
Henan	54997.07	55435
Hubei	43443.46	74440
Hunan	41781.49	62900
Guangdong	110760.94	88210
Guangxi	22156.69	44309

Hainan	5532.39	55131
Chongqing	25002.79	78170
Sichuan	48598.76	58126
Guizhou	17826.56	46267
Yunnan	24521.90	51975
Tibet	1902.74	52345
Shaanxi	26181.86	66292
Gansu	9016.70	35995
Qinghai	3005.92	50819
Ningxia	3920.55	54528
Xinjiang	13797.58	53593

Data Source: Data on value in this table are calculated at current prices while indices are at constant prices. Per capita GDP in 2020 is retrieved from China Statistical Yearbook (China National Statistical Bureau, 2021), and China National Bureau of Statistics, see: http://www.stats.gov.cn/tjsj/ndsj/2021/indexch.htm

In the view of the provincial level, the discrepancy among municipalities, coastal provinces, and undeveloped central or western provinces is considerably shown in Table 1. Take the comparison between Beijing and Gansu as one compelling example, the total Gross Regional Product(GDP) in Beijing is almost quadruple of that in Gansu, moreover, the Per Capita GDP in Beijing is far more triple to that in Gansu. The provincial economic disparity exists, and poses the chain effects on equity of education which cannot be neglected.

Table 2. 2014 to 2020 Per Capita Income of Four Regions in China (Self-drawn).

Nationwide Per Capita Disposable Income of Households in Eastern, Central, Western and Northeastern Regions							
RMB: yuan							
Group	2014	2015	2016	2017	2018	2019	2020
Eastern Region	25954.0	28223.3	30654.7	33414.0	36298.2	39438.9	41239.7
Central Region	16867.7	18442.1	20006.2	21833.6	23798.3	26025.3	27152.4
Western Region	15376.1	16868.1	18406.8	20130.3	21935.8	23986.1	25416.0
Northeastern Region	19604.4	21008.4	22351.5	23900.5	25543.2	27370.6	28266.2

Data Source: This table is retrieved from China Statistical Yearbook (China National Statistical Bureau, 2021), and China National Bureau of Statistics, see: http://www.stats.gov.cn/tjsj/ndsj/2021/indexch.htma

Undeniably, the concentration of population is regarded as one benefactor to economic development (S. Song et al., 2000)[6]. Rural migrants to city cause the labour shortage in rural regions, which expands the gap between rural and urban economic growth. In addition, agglomeration economies in municipalities like Beijing, Shanghai and Guangzhou lower the cost of infrastructure and promote the economy. The maunicipalities gained the highest per capita investment directly from the central government, and coastal areas including special economic zones (SEZ) attained the foreign direct

investment. Due to the related policy of the central government, the regional disparity has increased (S. Song et al., 2000)[6].

China is divided into four regions, that is Eastern, Central, Northeastern, and Western parts. The eastern (also named as coastal region) has eight provinces and three municipalities, besides, the central region has eight provinces and one autonomous region. In the western region, six provinces and three autonomous regions are included, where the Gansu (2021 the lowest Per Capita GDP province) belongs to. The burgeoning gap in regional development between 4 regions has been spotlighted as one inevitable barrier for future Chinese sustainable development. In table2, the gap of Per Capita Income(PCI) between the eastern region and the western region has increased, namely, the eastern region's PCI is higher than the western from 10578 yuan to 15823 yuan from 2014 to 2020.

Decentralized Educational Financing. It is noticeable that decentralization in education was promulgated since the mid-1990s, in this way, the central government was no longer centralization control but, a limited form of managerial rights to villages and townships government. In regards to basic education, lowest level of government (villages and townships level) was granted financial and managerial obligations (Zhao, 2009)[8]. The central government maintains a leading position, controlling the decentralization policy, and shaping the decentralization direction. In terms of Chinese basic education, a 6-3-3 system from primary, junior high and senior high schools is the majority patterns of education. Admittedly, decentralization in China has superior points, nonetheless, the adverse results on increasing region disparity, especially, urban and rural regions.

A major fiscal policy began in 2001 and was implemented in 2002 fundamentally changing educational funding. The educational management power shifted from the township government to the county government, however, it is not beneficial to local basic education. The top-down governance pattern is embedded into Chinese rural areas, which means county government undertakes mainly management responsibility of basic education. The fundamental role of basic education is a key path to succeed in the national college entrance examination. The disparity in fiscal condition between rural and urban areas widens the gap in the admission ratio of the National college entrance examination.

Inequality of Educational Financing. According to the existing data and documents, the imbalance between rural and urban economic development is a real problem that needs to be improved. The unequal development brought about by globalization, increased trade and economic growth benefits some regions and some populations, but also harms other regions and some populations (Andrés & Daniel, 2015)[2]. Economic inequality causes imbalance, which is the main factor leading to the phenomenon of education gap. More and more evidences show the widespread and broad impacts of regional imbalances, economic development imbalances and social polarization. China has a deep rural foundation. Although rural areas are undergoing economic transformation, industrialization and urbanization, rural areas have long faced the problem of

poverty, especially in remote inland areas and western regions. The disadvantages of geographical environment, natural disasters, low quality infrastructure and the concentration of ethnic minorities lead to rural poverty. In addition, the tendency of capital and labor to flow to cities promotes higher improvement in economically prosperous areas and intensifies the differences between urban and rural development (Zheng, 2021)[9]. Due to the imbalance of economic development, the economic gap between urban and rural areas has produced inequality in other fields, such as education.

Table 3. 2018-2021 Per Capita Expenditure on Education. Note: Table 3 is retrieved from Educational (Self-drawn).

2018-2021 Per Capita Expenditure on Education RMB: 10,000yuan				
Group	2018 Per capita expenditure on education	2019 Per capita expenditure on education	2020 Per capita expenditure on education	2021 Per capita expenditure on education
Northeastern Region	0.134	0.134	0.140	0.149
Eastern Region	0.228	0.242	0.262	0.270
Western Region	0.184	0.185	0.205	0.214
Central Region	0.148	0.159	0.173	0.181
Nation	0.167	0.176	0.193	0.204
Sum	0.186	0.193	0.210	0.219

Data Source: Statistical Yearbook of China (Educational Statistical Yearbook of China 2018-2021), see: https://www.chinayearbooks.com/educational-statistics-yearbook-of-china-2021.html

The indicator of per capita expenditure on education (PCEE) in table 3, indicating local government's financial support and capacity on education. Table 3 illustrates the average educational expenditure capacity through per capita calculation among four regions, the western, eastern, central and eastern/coastal ones. Meanwhile, table 4 of education expenditure per 10,000yuan of GDP also measures inequality of educational financing. In table 3, the PCEE of western is lower than that of the eastern (coastal) region 19.24%, 23.50%, 21.90% and 20.79% respectively from 2018 to 2021. It is noteworthy that the data from 2018 to 2021 concerning PCEE of western are all lower than that of national level. Owing to the dearth of educational investment, deficiency of teachers and inferior school conditions in undeveloped even backwards regions, it is indisputably that the quality of basic education is threatened greatly.

Table 4. 2011 to 2020 Gross Enrolment Ratio of Education by Level (Self-drawn).

Gross Enrolment Ratio of Education by Level unit:%					
Year	Pre-school Education Institutions the Age of 3-5	Primary Education According to Provincial Entrant Age Primary Schools Years	Junior Secondary Education the Age of 12-14	Senior Secondary Education the Age of 15-17	Higher Education the Age of 18-22

2011	62.3	104.2	100.1	84.0	26.9
2012	64.5	104.3	102.1	85.0	30.0
2013	67.5	104.4	104.1	86.0	34.5
2014	70.5	103.8	103.5	86.5	37.5
2015	75.0	103.5	104.0	87.0	40.0
2016	77.4	104.4	104.0	87.5	42.7
2017	79.6	104.8	103.5	88.3	45.7
2018	81.7	103.2	100.9	88.8	48.1
2019	83.4	103.0	102.6	89.5	51.6
2020	85.2	102.9	102.5	91.2	54.4

Data Source: Table 4 is retrieved from Educational Statistical Yearbook of China (Educational Statistical Yearbook of China 2020), see https://www.chinayearbooks.com/educational-statistics-yearbook-of-china-2020.html

Table 4 illustrates that 9 years Compulsory Education had fully implemented everywhere in China. By contrast, the gross enrollment ratio shrimped tremendously in higher education. The disparity in opportunities of higher education exists in rural and urban areas. In table 4, the gross enrollment ratio of higher education was 54.4% in 2020, what's worse, only26.9% in 2011 of students can accept higher education. The shares of rural students in HEIs is much less than urban students. In recent years, it is noticeable that Beijing, Shanghai and other metropolitans in China have an admission rate of HEIs up to 70%, on the contrary, the provinces with overwhelming majority rural students have only less than 50% (Xue & Li, 2021)[7].

Unbalanced development of Higher Education. In the past few decades, the equal education policy and the increasing number of higher education institutions cannot meet the growing demand for higher education. The supply distribution of higher education institutions (HEI) cannot maintain a balanced pattern in terms of quantity and quality (Borsi et al., 2022)[3]. Today, when higher education is in short supply, the reasons for this phenomenon are worth considering. First of all, due to the population density and insufficient supply of higher education in many provinces, some parts of China cannot meet the growing demand of students willing to accept higher education in terms of quantity and higher education quality. The imbalance of economic development in different regions of China has been accompanied by the expansion of the inter provincial gap in Higher Education in China. In addition, the nine-year compulsory education law promulgated in 1986 has promoted an increase in the number of students receiving basic education. Therefore, high school graduates have stimulated the demand for higher education. Third, elite education is gradually regarded as one of the most critical ways of social mobility, that is, to enter a higher social class.

The central government has divided the whole colleges over 2000 into three categories, national first-tier colleges which elite education mainly focuses, provincial and local four-year colleges and other vocational colleges or non-government institutions. College admission in China is determined by NCEE, and the government sets cutoff scores for admission to different level of HEIs.

Table 5. Number of Higher Education Institutions of 31 Provinces and cities in 2020 (Self-drawn)**.**

Number of Higher Education Institutions (unit: insitution)				
		Regular HEIs		
Region	Total	of Which: HEIs under Central Ministries Agencies	HEIs Offering &Degree Programs	Higher Vocational Colleges
Total	2738	118	1270	1468
Beijing	92	39	67	25
Tianjin	56	3	30	26
Hebei	125	4	61	64
Shanxi	85	0	34	51
Inner Mongolia	54	0	17	37
Liaoning	114	5	63	51
Jilin	64	2	37	27
Heilongjiang	80	3	39	41
Shanghai	63	10	40	23
Jiangsu	167	10	78	89
Zhejiang	109	1	60	49
Anhui	120	2	46	74
Fujian	89	2	39	50
Jiangxi	105	0	45	60
Shandong	152	3	70	82
Henan	151	1	57	94
Hubei	129	8	68	61
Hunan	128	3	52	76
Guangdong	154	4	67	87
Guangxi	82	0	38	44
Hainan	21	0	8	13
Chongqing	68	2	26	42
Sichuan	132	6	53	79
Guizhou	75	0	29	46
Yunnan	82	1	32	50
Tibet	7	0	4	3
Shaanxi	96	6	57	39
Gansu	50	2	22	28
Qinghai	12	0	4	8
Ningxia	20	1	8	12
Xinjiang	56	0	19	37

Data Source: Table 5 is retrieved from Educational Statistical Yearbook of China (Educational Statistical Yearbook of China 2020), see https://www.chinayearbooks.com/educational-statistics-yearbook-of-china-2020.html

In table 5, Beijing as capital city has occupied 3.36% of total number universities in whole nation, and has 39 colle ges affiliated to ministry which accounts for 33.05% of

total. However, none of Shanxi, Inner Mongolia, Qinghai, Xinjiang and Tibet which are located in the central and western regions have colleges affiliated to ministry. Tibet, Qinghai and Ningxia have the lowest number of HEIs, that is 7, 12 and 20 respectively. The database is from 2020 Educational Statistical Yearbook of China has evidently reveals the inequality of distribution of HEIs in China. Especially, in the central and western regions, the limited development and construction of HEIs are exposed.

The development of connotation and quality of basic education is uneven. The imbalance of economic structure is the root of the gap between urban and rural education. In fact, due to the imbalance of China's current education system, there is a serious tendency of inequality in the allocation of educational resources. In particular, there is an uneven balance between school running conditions and teaching resources in basic education, which intensifies the gap between urban and rural gross enrollment rates at different levels of education. In fact, a fair educational process is the key to achieve educational equity. Education investment and resource allocation show inequality between urban and rural areas. Insufficient investment in rural education, especially in compulsory education, is shown in Table 6.

Table 6. 2020 Condition of School Buildings in Basic Education between rural and urban area (Self-drawn).

2020 Condition of School Buildings in Basic Education								
	Areas Occupied(m2)	Books & Magazines in Libraries (volume)	PC(set)	Classroom(room)		Total Value of Fixed Asset(10,000 yuan)		
							of Which:Total Value of Equip & Instru.	
	Total		Total	Total	of Which: N etwork Multimedia Classroom	Total	Subtotal	of Which: for Experiment
Senior High Schools								
Total	1120864514.37	1026636999	6155857	1214820	887779	109070966.09	11818234.46	3412826.75
Urban Area	552118461.25	562340117	3681072	654996	498589	62235853.55	7527130.90	2001462.91
Rural Area	502049572.99	425263938	2233085	501926	349559	41122637.00	3837757.34	1274636.37
Junior High Schools								
Total	1711920865.57	1816745715	9567735	2068343	1479812	113017580.14	13930825.50	3721966.78
Urban Area	472433651.25	663943679	3932538	747168	585133	45724175.60	6278800.73	1420304.39
Rural Area	363774444.71	286113228	1457738	362046	229404	16862439.72	1916110.14	612042.52
Primary Schools								
Total	2380474351.98	2579218082	14905551	4112699	2762762	134139191.82	19402600.39	3486687.03
Urban Area	506567498.15	949166676	5647792	1177095	959359	51171105.44	8630706.22	1247515.40
Rural Area	1101628085.28	696694344	4331903	1598768	869191	37791983.82	4593395.77	1059176.42

Data Source: Table 6 is retrieved from Educational Statistical Yearbook of China (Educational Statistical Yearbook of China 2020), see: http://www.stats.gov.cn

In Table 6, the 2020 data covering school conditions such as high school, middle school and primary school illustrate the differences between rural and urban areas in school area, libraries, computers, classrooms, experimental equipment and Book capacity. The outstanding data shows that there is a huge gap between rural and urban technical facilities, including multimedia classrooms and personal computers. For instance, the number of personal computers in urban high schools exceeds 55% of rural schools, and the number of personal computers in urban high schools is more than twice that of rural schools. Similarly, in terms of the comparison of library collections, from high school, junior high school to primary school, the number of urban schools is 32.23%, 132.06% and 36.24% higher than that in rural areas respectively. There is a big gap between rural and urban junior high schools, which affects students' academic performance and even their future opportunities to enter colleges and universities. The difference between urban and rural school conditions leads to students' learning efficiency and learning.

In terms of teaching resources, the gap between urban and rural teachers is widening, especially the effective demand for rural teachers is seriously insufficient. There is a serious gap between the qualification level of teachers in rural and urban areas. Specifically, the average gap between the qualification level of teachers in basic education in rural and urban areas is about 30%(Xue & Li, 2021)[7]. What's worse, the flow of excellent teachers to cities has reduced the number and quality of rural teachers. Urban teachers rarely return to rural areas. The shortage of teachers trained professionally and systematically is a common phenomenon in current rural education. The core of the gap between basic education in rural and urban areas lies in the improvement of quality.

2.2 Household Input and Equity of Education

The total household income inequality between urban and rural areas, developed coastal areas and inland areas, provincial capitals of municipalities directly under the central government, Northeast China and Western China has different effects on household education expenditure. The affordability level of family education expenditure in China is very important, and finally exacerbated the imbalance of education levels, which has a real impact on the inequality of education level of social strata. Family investment, including social status, economic strength and other aspects of education investment ability in parenting differences. The influence of social status and economic strength on college entrance examination results is indeed real.

The influence of social status and economic strength on students' actual learning results. The definition of social economic status (SES) is a measure that combines economic and social factors to determine a person's economic and social status. It refers to family income, education and occupation. Among families with higher socioeconomic status, the level of education has been greatly strengthened. In contrast, in poor areas, education is not a priority compared with food and shelter. The socio-economic status of students' college entrance examination results shows that socio-economic status has

an impact on academic performance, and the socio-economic status of students' families is positively correlated with college entrance examination results. Students from families with higher socio-economic status tend to get higher scores in the college entrance examination. From the perspective of the impact of socio-economic status on the college entrance examination, it is proved by using the socio-economic status measurement data published from 1990 to 2000 to conduct a comprehensive meta-analysis of American research and explore the socio-economic status empirical model of the impact of socio-economic status on the college entrance examination (Zhang, 2016)[10]. Interestingly, socioeconomic status has a positive impact on the scores of urban students in mathematics and English in the college entrance examination, but it has no impact on rural students. Social and economic status has neither positive nor negative impact on the college entrance examination of rural students. Rural family education resources are limited, and the social economy has little impact on rural students.

How Parenting Style Has Impacted School Learning. Chinese parenting has aroused worldwide concerns due to Chinese academic achievements and the culture of prioritizing education. A large amount of literatures has revealed a positive relationship between parenting style and high academic achievements, however, whether the positive correlation could be proved in the performance of NCEE. Typically, in terms of Zhang (2016)[10], parenting style is measured by Baumrind's parent style theory, and most literatures related to Chinese education adopt most frequently EMBU, which conducts main component factor analysis with 81items. Socioeconomic status, residency status (local and rural), ethnicity and gender have limited influences on the performance of NCEE. Regardless of the socioeconomic context where parents come from, high expectation, enthusiastic devotion to children's education, and over intervention have little effects on students' academic learning. On the contrary, it is significantly correlation between early childhood parenting and performance of NCEE, in particular, the student accompanied with parents in his/her childhood or the student grew with other guardians like grandparents during childhood have different results of NCEE. It is generally seen that the migrant children in China, as left-behind children, live with grandparents or other relatives have more or less psychological stress and been reluctant to accept education. In this case, parenting plays a pivotal role to motivate children to learn effectively. Therefore, in the view of parenting, only harmonious, equal, attention and love style of parenting can positively influence students' performance of academic learning, however, the residency location, socioeconomic and gender have non-significant influence. It is cautiously concluded that parenting styles to some degree would be affected by different students' individual personalities, which may also cause bias results of how parenting influence the educational equity of NCEE. The relationship between parenting style and results of NCEE is complex and has potential limitation to be measured.

2.3 The Allocation of NCEE Enrollment Plan

The new NCEE reform policy "the State Council on deepening the implementation of the reform of the examination and enrollment system" proposes to improve the allocation of NCEE enrollment plans. In this policy, the enrollment plans shall take several points into consideration: a) the number of students and school conditions in different regions; b) the admission rate of national college entrance exam in central and western regions or provinces with large population density; c) rural impoverished regions targeted enrollment special program design, namely First-tier HEIs or HEIs affiliated by ministry targeted enrollment; d) minority groups including ethnic minority regions, children of martyrs or mountainous areas or pastoral areas and other minority people.

Table 7. The number of applicants and admission ratio for the 2020 national college entrance examination in 31 provinces and cities (Self-drawn).

The number of applicants and admission ratio for the 2020 national college entrance examination in 31 provinces and cities					
Region	Number of Applicants（10,000 people）	Project 211	Project 985	First-Tier Universities and Colleges	Number of admissions from first-year colleges and universities
Beijing	4.92	14.00%	4.30%	48.80%	2.40
Tianjin	5.6	12.70%	5.80%	42.60%	2.39
Shanghai	5.00	13.60%	5.30%	40.70%	2.04
Ningxia	6.03	8.60%	2.30%	29.90%	1.80
Qinghai	4.66	11.70%	3.00%	29.90%	1.39
Fujian	20.26	5.40%	2.00%	26.10%	5.29
Hainan	5.73	6.50%	1.90%	25.60%	1.47
Jilin	15.00	9.00%	3.60%	25.00%	3.75
Liaoning	21.83	5.90%	2.30%	24.30%	5.30
Hubei	39.48	5.20%	2.10%	23.10%	9.12
Xinjiang	22.98	1.67%	7.76%	22.33%	5.13
Heilongjiang	18.90	6.70%	2.00%	22.20%	4.20
Shaanxi	32.23	5.70%	1.90%	22.20%	7.16
Inner Mongolia	19.80	6.00%	1.50%	21.50%	4.26
Guizhou	47.00	5.20%	1.20%	20.90%	9.82
Xizang	3.20	1.80%	7.90%	20.70%	0.66
Hebei	62.47	4.40%	1.50%	20.50%	12.81
Zhejiang	32.57	4.40%	1.90%	20.30%	6.61
Gansu	26.31	3.50%	1.50%	20.20%	5.31
Jiangsu	34.89	5.20%	2.10%	19.40%	0.07
Anhui	52.38	4.10%	1.10%	19.40%	10.16
Chongqing	28.30	5.40%	2.10%	19.00%	5.38
Jiangxi	46.19	6.50%	1.60%	18.50%	8.55
Hunan	53.70	4.50%	1.70%	17.40%	9.34
Yunnan	34.37	4.50%	1.40%	16.80%	5.77
Sichuan	67.00	4.40%	1.50%	16.50%	11.06
Shandong	53.00	4.40%	1.50%	16.50%	8.75
Shanxi	32.57	4.70%	1.30%	15.80%	5.15

Guangdong	77.96	2.70%	1.30%	15.20%	11.85
Guangxi	50.70	4.60%	1.30%	14.30%	7.25
Henan	115.60	4.10%	1.27%	13.60%	15.72

Data Source: table 7 is retrieved from Educational Statistical Yearbook of China (Educational Statistical Yearbook of China 2020), see: http://www.stats.gov.cn

In table 7, in 2020, the lowest NCEE admission rate of First-tier universities/colleges is Henan province, which is one of the most populous provinces in China and has 115,600,000 students who participated in this exam. The most poverty provinces Guizhou and Gansu only have 20.90% and 20.20% of students respectively to achieve First-tier universities/colleges, meanwhile, only 5.2% of Project 211 and 1.20% of Project 985 in Guizhou, 3.5% of Project 211 and 1.50% of Project 985 in Gansu. It is diametrically opposite to municipalities, like Beijing and Shanghai. Beijing has 48.8% of admission of First-tier universities/projects which prioritizes in China, followed by Tianjin and Shanghai, 42.60% and 40.70% respectively. Especially, the admission rate of Project 211 in Beijing occupies the top position in the whole cities, that is 14.00%, by contrast, Xizang and Xinjiang has the lowest rate of Project 211, which are 1.80% and 1.67% respectively.

The realization of educational equity of national college entrance examination (NCEE) relies not only educational policy reform or educational system but also non-education system. The history of equity in NCEE reflects the central government's political plans, economic development needs, society needs and other complex factors. The data from Table 1 to Table 7 retrieved from the China National Statistical Bureau and report of the state council provides evidences and explicit statistics to prove the existence of inequality education in China.

Non-education systems have a more obvious role to play in fairness in higher education. It requires to continuously coordinate individual and national needs. The history of fairness in China's college entrance exams reflects the government's political needs, economic needs, social security needs, and other factors. In other words, the non-education system has set the direction of change in the college entrance examinations.

3 CONCLUSION

By analyzing the regional equity, family investment and the government's allocation plan for national college entrance examination enrollment, this paper makes an overall analysis of the equity of national college entrance examination education, and reveals the practical role of influencing factors on national college entrance examination related to education equity, including economic development imbalance, decentralization policy and education financing, condition equity of basic education and higher education, financial redistribution, family investment and enrollment distribution among provinces. The continuous improvement of national college entrance examination system is closely related to candidates, education equity, local education, school construction, and the quality and quantity of teachers. Through the promotion of the whole society, education should be supported, especially policy-making, financial allocation, the support of teachers from the Ministry of education, the guidance of educational administrative departments, the professional theoretical support of research institutions and the

correct guidance of public opinion. From the government, the Ministry of education to schools, parents and public opinion, will finally realize the balanced and sustainable development of education in China.

Better realization of educational equity requires the joint efforts of society, schools and families. First of all, while the central government has increased financial support for education, the scientific nature of the overall management of educational resources has been further improved. The central government is expected to increase support for areas with relatively backward education and achieve steady improvement of education through a variety of practical policy support. Secondly, the demand for equal opportunities should permeate all levels of society. In other words, the fairness of access to education should be the same in every student's wealth, gender, geographical location, disability and race. Pay more attention to the education situation of social vulnerable groups, and realize multi-channel education assistance methods for vulnerable groups. Third, strengthen teaching and learning resources to meet the needs of educational equity in the college entrance examination, such as increasing the number of teachers in high school education by about 20%. In addition, it is suggested to expand the types of high school teachers, such as psychological counseling teachers, information technology teachers and career planning teachers. There is also a need to strengthen and expand classrooms, that is, to increase the number of classrooms, upgrade multimedia equipment, and renovate laboratories and functional classrooms. The most important thing is to determine the impact of cross defects on educational equity. The differences in education are complex, and the influencing factors involved are diverse.

The research on the development of education is bound to be a continuous process. With the development of society, education is bound to face new challenges and problems. Therefore, through the collection of data on the actual problems of education and the broader collection of data on the problem dimensions involved in the balanced development of education, it will make the exploration of problems more in-depth and more practical value in future educational research.

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