Study on the Balanced Allocation of Preschool Education Resources in Anhui Province

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Abstract

Preschool education, as the initial stage of education, has always been an important part of improving the quality of the people and promoting the modernization of education in China. This paper, exponential model from financial resources, human resources, material resources system analysis in three aspects: the equilibrium configuration of preschool education resources in Anhui province, and analyzes the Anhui province pre-school education resource allocation imbalance, the cause of preschool education from strengthening government investment main body responsibility, improve the preschool education fiscal spending, improve the supervision of the preschool education funds, etc., Put forward the countermeasures and suggestions to promote the balanced allocation of preschool education resources in Anhui Province.

Keywords

Preschool Education; Allocation of Educational Resources; Education is Balanced.

1. New Requirements for the Balanced Allocation of Preschool Education Resources

Since the reform and opening up, China's education cause has developed rapidly, the strength of education has been significantly enhanced, and the quality of education received by the public has been increasingly improved. At the same time, the general public's demand for educational resources is also increasing rapidly. Inclusive, high-quality and fair preschool education resources have become people's pursuit, while insufficient high-quality education resources and unbalanced resource allocation are still problems that the government urgently needs to solve. According to the report to the 19th National Congress of the Communist Party of China (CPC), education should be the focus of development and modernization of education should be accelerated. Preschool education, as an important part of China's education field, plays a vital role in the development of society.

In recent years, Anhui Province, guided by the government's education policies, has also gradually improved its support for the allocation of preschool education resources, and has made some progress. Since 2011, Anhui province has focused on expanding preschool education resources and vigorously developing preschool education in order to implement the decisions and arrangements of the CPC Central Committee and The State Council. From 2011 to 2016, Anhui implemented two pre-school education action plans, and launched the third action plan in 2017 to solve the serious shortage of pre-school education resources and promote the balanced development of pre-school education. In 2022, the "14th Five-year Plan for The Development of Education in Anhui Province" issued by the Department of Education of Anhui Province proposes to increase the supply of preschool education resources and narrow the gap in the development of regional preschool education. However, in the process of promoting balanced development of the preschool education in Anhui, around the level of economic development is uneven, incomplete financial input mechanism, urban and rural dual structure restrict the long-term effects of various factors such as these questions require Anhui

continue to intensify efforts to solve the problem of prominent imbalance, constantly promote balanced development of the preschool education, Better progress has been made in promoting the balanced allocation of preschool education resources.

2. An Empirical Analysis of the Balanced Allocation of Preschool Education Resources in Anhui Province

The purpose of balanced allocation of preschool education resources is to ensure that every child in the kindergarten can receive equal and balanced preschool education resources, and its starting point is to promote educational equity and meet the public's demand for preschool education. Although Anhui province has made some achievements in the allocation of preschool education resources, further research is needed on the degree of the balance of preschool education resources allocation and the difference of the balance of preschool education resources allocation between different regions and within regions. Therefore, this chapter from financial resources, human resources, material resources from three aspects, in reference to previous scholars on the basis of research results, build an index system of preschool education resource equilibrium configuration in Anhui province, on equilibrium configuration of preschool education resources in Anhui province based on the empirical analysis, serve as a reference for preschool education resources in Anhui province equilibrium configuration reference.

(1) Theil index

Theil index, also known as Theil entropy, was proposed by the Dutch economist Theil in 1967 when he studied the concept of entropy. In the early stage, it was used to measure the imbalance of income distribution between individuals or regions. When the Value of Theil index is closer to 1, it indicates that the balanced degree of resource allocation is lower; on the contrary, when the value of Theil index is closer to 0, it indicates that the balanced degree of resource allocation is higher. In this section, 16 prefecture-level cities in Anhui province are divided into 16 groups based on municipal districts. The differences between groups represent the balanced degree of pre-school education resource allocation between regions in Anhui Province, namely between prefecture-level cities, and the differences within groups represent the balanced degree of pre-school education resource allocation within regions, namely between prefecture-level cities and inner cities. In summary, the Formula for calculating Theil index T of balanced allocation of regional preschool education resources in Anhui Province is as follows:

$$T_j = \sum \left(\frac{P_1}{P_j} \times \ln \left(\frac{P_{j1}/P_j}{W_{j1}/W_j} \right) \right) \tag{1}$$

$$T_0 = \sum N_j \ln \frac{N_j}{R_j} \tag{2}$$

$$T = T_j + T_0 \tag{3}$$

Formula (1), j is the number of sets of sample group, j group has more than one district (county), Wj is first j a city in Anhui province in the kindergarten, Wj1 is the first j a city in the first district (county) in the kindergarten, Pj is the first j a city in Anhui province on the number of the indicators, Pj1 is the first j a city in the first district (county) on the number of the indicators, Tj is the Thiel index within the group. In Formula (2), T0 is the Theil index between groups, Nj is the proportion of the index number in the JTH city in the total index, Rj is the proportion of the

number of children in kindergartens in the JTH city in the number of children in kindergartens in the province. In formula (3), T is the total Theil exponent.

In order to measure the contribution of preschool education resources between prefecture-level cities and all districts and counties within prefecture-level cities to the balanced allocation of preschool education resources in Anhui Province, the contribution of inter-regional and intra-regional allocation of preschool education resources to the overall difference in Anhui province was calculated by formula (4) and (5).

$$T_{\text{BETWEEN GROUPS}} = \frac{T_J}{T} \tag{4}$$

$$T_{\text{Within the group}} = 1 - \frac{T_j}{T} \tag{5}$$

(2) Analysis of the balanced allocation of preschool education resources in Anhui Province

In order to investigate the differences of regional pre-school education resources allocation in Anhui province mainly comes from regional or area, and the equilibrium level of different district preschool education resources allocation, in Anhui province and municipal, district (county) as the basic unit, area in Anhui province were analyzed by tal exponential model system and balance of preschool education resource allocation in the area of differences.

(3) Perform resource balancing analysis

Table 1. Theil index of education funds per kindergarten student in general public budget

region		Thayer index			contribution	
	A combined	Differences between groups	Differences in the group	Inter-group contribution		Intra-group contribution
hefei	0.088	0.042	0.046	47.73%		52.27%
wuhu	0.392	0.291	0.101	74.23%		25.77%
bengbu	0.211	0.014	0.197	6.64%		93.36%
huainan	0.106	0.012	0.094	11.32%		88.68%
Ma on shan	0.326	0.130	0.196	39.88%		60.12%
huaibei	0.444	0.005	0.439	1.13%		98.87%
tongling	0.198	0.083	0.115	41.92%		58.08%
anqing	0.159	0.017	0.142	10.69%		89.31%
huangshan	0.477	0.081	0.396	16.98%		83.02%
chuzhou	0.139	0.018	0.121	12.95%		87.05%
fuyang	0.152	0.057	0.095	37.50%		62.50%
suzhou	0.090	0.036	0.054	40.00%		60.00%
luan	0.168	0.004	0.164	2.38%		97.62%
bozhou	0.214	0.037	0.177	17.29%		82.71%
chizhou	0.276	0.045	0.231	16.30%		83.70%
xuancheng	0.750	0.014	0.736	1.87%		98.13%

Looking at the three indicators of financial resources, it can be seen that the unbalanced allocation of financial resources of regional preschool education in Anhui province mainly

comes from the gap of resource allocation within the region, and the gap of resource allocation between regions is small. On the whole, only Wuhu city's contribution degree within the group is less than the contribution degree between groups, so it can be concluded that the imbalance degree of allocation of financial resources for preschool education within Anhui Province is higher than that between regions. In terms of education expenditure in per student general public budget, the highest value of Theil index is 0.736 in Xuancheng City, and the lowest value is 0.046 in Hefei city, which indicates that the equilibrium level of education expenditure allocation in per student general public budget for preschool education in Hefei city is the highest, and that in Xuancheng city is the lowest. The highest value of Theil index between groups is 0.291 in Wuhu city, and the lowest value is 0.004 in Lu 'an City, which indicates that the equilibrium level of education funds allocation of preschool students per capita in Lu 'an city is the highest, and that of Wuhu city is the lowest (See Table 1).

The highest value of Theil index is 0.438 in Huaibei city, and the lowest value is 0.047 in Suzhou city, which indicates that the equilibrium level of the allocation of educational expenses in the average general public budget of preschool education students is the highest in Suzhou City, and the lowest in Huaibei City. The highest value of Theil index between groups is 0.127 in Ma 'anshan city, and the lowest value is 0.003 in Lu 'an City. Therefore, it can be seen that the equilibrium level of education fund allocation of per capita general public budget for preschool education students between regions is the highest in Lu 'an City, and the equilibrium level of education fund allocation between regions is the lowest in Ma 'anshan City (See Table 2).

Table 2. Theil index of education expenses per kindergarten student in general public budget

region	Thayer index				contribution	
	A combined	Differences between groups	Differences in the group	Inter-group contribution		Intra-group contribution
hefei	0.105	0.038	0.067	36.19%		63.81%
wuhu	0.341	0.268	0.073	78.59%		21.41%
bengbu	0.205	0.012	0.193	5.85%		94.15%
huainan	0.108	0.010	0.098	9.26%		90.74%
Ma on shan	0.260	0.127	0.133	48.85%		51.15%
huaibei	0.444	0.006	0.438	1.35%		98.65%
tongling	0.095	0.045	0.050	47.37%		52.63%
anqing	0.151	0.016	0.135	10.60%		89.40%
huangshan	0.172	0.063	0.109	36.63%		63.37%
chuzhou	0.114	0.019	0.095	16.67%		83.33%
fuyang	0.116	0.057	0.059	49.14%		50.86%
suzhou	0.084	0.037	0.047	44.05%		55.95%
luan	0.186	0.003	0.183	1.61%		98.39%
bozhou	0.083	0.035	0.048	42.17%		57.83%
chizhou	0.276	0.057	0.219	20.65%		79.35%
xuancheng	0.439	0.015	0.424	3.42%		96.58%

According to the two indicators of human resources, it can be seen that the unbalanced allocation of human resources in regional preschool education in Anhui province mainly comes

from the gap of resource allocation within the region, and the gap of resource allocation between regions is small. On the whole, only Huainan city and Tongling City have lower intra-group contribution than inter-group contribution, so it can be concluded that the imbalance degree of human resources allocation of pre-school education within Anhui Province is higher than inter-region. In terms of student-teacher ratio, the highest value of Theil index in the region is 0.534 in Chizhou city, and the lowest value is 0.007 in Huainan City. Therefore, it can be seen that the equilibrium level of the student-teacher ratio allocation of preschool education in Chizhou City is the lowest, and the equilibrium level in Huainan city is the highest. The highest value of Theil index between regions is 0.082 of Huangshan city, and the lowest value is 0.001 of Lu 'an City. Therefore, it can be seen that the balance level of pre-school teacher-student ratio allocation between regions of Huangshan City is the lowest, while that of Lu 'an city is the highest.

In terms of the proportion of full-time teachers, the highest value of Theil index is 0.513 in Chizhou city, and the lowest value is 0.003 in Bozhou City. Therefore, the equilibrium level of the proportion allocation of full-time preschool teachers in Chizhou City is the lowest, and the equilibrium level is the highest in Bozhou City. The highest value of Theil index between regions is 0.084 of Chizhou city, and the lowest value is 0.002 of Lu 'an City. Therefore, it can be seen that the equilibrium level of the proportion allocation of full-time preschool teachers among regions in Chizhou city is the lowest, while that of Lu 'an city is the highest (See Table 3 and Table 4).

Table 3. Bitel index of kindergarten students and teachers

region		Thayer index			contribution	
	A combined	Differences between groups	Differences in the group	Inter-group contribution		Intra-group contribution
hefei	0.221	0.055	0.166	24.89%		75.11%
wuhu	0.056	0.002	0.054	3.57%		96.43%
bengbu	0.117	0.012	0.105	10.26%		89.74%
huainan	0.035	0.028	0.007	80.00%		20.00%
Ma on shan	0.100	0.026	0.074	26.00%		74.00%
huaibei	0.249	0.037	0.212	14.86%		85.14%
tongling	0.139	0.075	0.064	53.96%		46.04%
anqing	0.164	0.029	0.135	17.68%		82.32%
huangshan	0.191	0.082	0.109	42.93%		57.07%
chuzhou	0.110	0.012	0.098	10.91%		89.09%
fuyang	0.123	0.058	0.065	47.15%		52.85%
suzhou	0.080	0.036	0.044	45.00%		55.00%
luan	0.136	0.001	0.135	0.74%		99.26%
bozhou	0.072	0.030	0.042	41.67%		58.33%
chizhou	0.608	0.074	0.534	12.17%		87.83%
xuancheng	0.200	0.027	0.173	13.50%		86.50%

Table 4. Theil index of proportion of full-time kindergarten teachers

region	Thayer index				contribution	
	A combined	Differences between groups	Differences in the group	Inter-group contribution		Intra-group contribution
hefei	0.097	0.055	0.042	56.70%		43.30%
wuhu	0.095	0.013	0.082	13.68%		86.32%
bengbu	0.103	0.003	0.100	2.91%		97.09%
huainan	0.163	0.016	0.147	9.82%		90.18%
Ma on shan	0.089	0.044	0.045	49.44%		50.56%
huaibei	0.271	0.049	0.222	18.08%		81.92%
tongling	0.167	0.073	0.094	43.71%		56.29%
anqing	0.138	0.003	0.135	2.17%		97.83%
huangshan	0.191	0.082	0.109	42.93%		57.07%
chuzhou	0.070	0.005	0.065	7.14%		92.86%
fuyang	0.121	0.059	0.062	48.76%		51.24%
suzhou	0.162	0.033	0.129	20.37%		79.63%
luan	0.069	0.002	0.067	2.90%		97.10%
bozhou	0.025	0.022	0.003	88.00%		12.00%
chizhou	0.597	0.084	0.513	14.07%		85.93%
xuancheng	0.262	0.037	0.225	14.12%		85.88%

Looking at the two indicators of material resources, it can be seen that the unbalanced allocation of regional preschool education material resources in Anhui province mainly comes from the gap of resource allocation within the region, and the gap of resource allocation between regions is small. In terms of per student school space, the highest value of Theil index in the region is 0.335 in Chizhou city, and the lowest value is 0.036 in Wuhu City. Therefore, the equilibrium level of per student school space allocation in Chizhou city is the lowest, and the equilibrium level in Wuhu city is the highest. The highest inter-regional Tail index is 0.094 in Huangshan city, and the lowest is 0.005 in Bengbu City. Therefore, it can be seen that huangshan city has the lowest inter-regional equilibrium level of per student school space allocation, while Bengbu has the highest inter-regional equilibrium level.

In terms of books per student, the highest value is 0.312 in Huaibei city, and the lowest value is 0.012 in Wuhu City. Therefore, the equilibrium level of books per student allocation in Huaibei City is the lowest, and the equilibrium level is the highest in Wuhu city. The highest value between regions is 0.116 in Huangshan city, and the lowest value is 0.003 in Lu 'an City. In summary, the balance degree of allocation of pre-school educational material resources between regions in Anhui Province is higher than that within regions (see Table 5 and Table 6).

Table 5. Theil index of school building area per student in kindergarten

region	Thayer index				contribution	
	A combined	Differences between groups	Differences in the group	Inter-group contribution		Intra-group contribution
hefei	0.105	0.036	0.069	34.29%		65.71%

wuhu	0.081	0.045	0.036	55.56%		44.44%
bengbu	0.163	0.005	0.158	3.07%		96.93%
huainan	0.142	0.021	0.121	14.79%		85.21%
Ma on shan	0.151	0.058	0.093	38.41%		61.59%
huaibei	0.333	0.007	0.326	2.10%		97.90%
tongling	0.186	0.060	0.126	32.26%		67.74%
anqing	0.174	0.056	0.118	32.18%		67.82%
huangshan	0.217	0.094	0.123	43.32%		56.68%
chuzhou	0.090	0.026	0.064	28.89%		71.11%
fuyang	0.199	0.068	0.131	34.17%		65.83%
suzhou	0.148	0.051	0.097	34.46%		65.54%
luan	0.151	0.009	0.142	5.96%		94.04%
bozhou	0.148	0.059	0.089	39.86%		60.14%
chizhou	0.367	0.032	0.335	8.72%		91.28%
xuancheng	0.259	0.056	0.203	21.62%		78.38%

Table 6. Theil index of books per kindergarten student

region		Thayer index			contribution	
	A combined	Differences between groups	Differences in the group	Inter-group contribution		Intra-group contribution
hefei	0.081	0.013	0.068	16.05%		83.95%
wuhu	0.061	0.049	0.012	80.33%		19.67%
bengbu	0.263	0.006	0.257	2.28%		97.72%
huainan	0.184	0.016	0.168	8.70%		91.30%
Ma on shan	0.197	0.074	0.123	37.56%		62.44%
huaibei	0.318	0.006	0.312	1.89%		98.11%
tongling	0.185	0.056	0.129	30.27%		69.73%
anqing	0.189	0.042	0.147	22.22%		77.78%
huangshan	0.270	0.116	0.154	42.96%		57.04%
chuzhou	0.242	0.031	0.211	12.81%		87.19%
fuyang	0.225	0.078	0.147	34.67%		65.33%
suzhou	0.195	0.056	0.139	28.72%		71.28%
luan	0.088	0.003	0.085	3.41%		96.59%
bozhou	0.132	0.054	0.078	40.91%		59.09%
chizhou	0.264	0.037	0.227	14.02%		85.98%
xuancheng	0.300	0.064	0.236	21.33%		78.67%

3. The Reasons for the Unbalanced Allocation of Preschool Education Resources in Anhui Province

(1) Regional differences in economic development

The development level of regional economy is not only affected by congenital conditions but also restricted by human factors. Natural resources, geographical conditions, economic policies and population changes can all affect the development of regional economy to a certain extent. The economic strength of each region depends on the level of regional economic development, and the investment degree of preschool education resources has an important relationship with regional economic aggregate and financial capacity. The level of economic development determines the preschool education resources due to the difference in the economic level of different regions, the investment in preschool education resources will be different in different regions. Areas with good economic level will have adequate investment in educational resources, while areas with poor economic level will have insufficient investment in educational resources. Therefore, the regional economic development determines the development level of preschool education, and it will inevitably lead to the balanced degree of the differential allocation of preschool education resources. The unbalanced development of preschool education is also the embodiment of the expenditure gap and regional economic development level difference.

(2) Urban and rural dual structure constraints

The urban-rural dual structure is due to the country's early economic development is backward, low productivity, China implemented the policy of giving priority to the development of industry, agriculture to support industry, and the countryside to feed the city, so the formation of urban-rural dual social structure and economic structure. Under the social background of urban-rural dual structure, urban and rural areas are different in system management, policy implementation, resource allocation and other aspects, resulting in the imbalance between urban and rural development. With the acceleration of urbanization, cities have gained a lot of financial resources, human resources and social resources, thus realizing the development of urbanization by leaps and bounds. Under the social background of accelerated urbanization, rural population swarms into urban areas in order to obtain high-quality education, medical and social resources and improve their living standards, resulting in the further widening of the urban-rural development gap. Restricted by the dual structure, the regional differences between urban and rural areas are difficult to change in a short period of time, which is also the fundamental reason for the unbalanced allocation of preschool education resources between urban and rural areas in Anhui Province.

(3) The system of financial investment in education is not perfect

At present, preschool education in China mainly adopts the educational financial investment system of "local responsibility and hierarchical management", which increases the economic pressure of governments at all levels in a certain sense. Where education funds transfer certain conditions, the pre-school education resource allocation of investment mainly relies on the local governments at all levels, the level of economic development in a better area still can afford, ensuring the rational allocation of education resources, providing substantial material basis for local pre-school education and talent resource, realize high quality pre-school education development. However, in some regions with relatively backward economic development, due to their limited economic capacity and social resources, the investment of preschool education funds has been repeatedly cut, which leads to the requirements of promoting the balanced allocation of preschool education resources are difficult to be met and supplemented. It is because of the financial investment system of preschool education is not perfect, so that preschool education in the investment of many problems: insufficient financial investment, investment gap between regions, governments at all levels of economic burden.

4. Countermeasures and Suggestions on Promoting Balanced Allocation of Preschool Education Resources in Anhui Province

(1) Strengthening the responsibility of the government for investing in preschool education

Pre-school education in our country now is a "local charge, hierarchical management" of education management system, financial input in preschool education by local governments bear the main responsibility, but the other every level of the government in pre-school education, what kind of responsibility, in the education financial allocation in the process of how to divide specific responsibilities, these problems is unclear. Therefore, the government of Anhui Province should plan the overall cause of preschool education, ensure the financial input and distribution of preschool education in the province, strengthen the organization and leadership of the development of preschool education, and ensure the financial supply of preschool education in the region. Education departments at all levels need to study laws and policies related to preschool education, formulate budgets for preschool education according to local conditions, allocate funds and resources under clear preschool education management standards, and regularly carry out supervision to ensure the fairness of preschool education resource allocation.

(2) Increasing government funding for preschool education

With the improvement of the economic level of Anhui Province, the total investment of preschool education public financial budget education funds increased year by year, reaching 16.436 billion yuan in 2020, significantly enhancing the guarantee of preschool education financial investment. But with the development of preschool education in Anhui province, compared to the financial resources needed for the present stage preschool education of fiscal funds investment cannot be effectively satisfy the real need of balanced development of preschool education resource allocation, and preschool education in Anhui province fiscal funds inputs is far lower than the compulsory education phase, its financial strength and preschool education resource supply level does not match, The total amount of government investment in preschool education is large. Therefore, Anhui Provincial government should improve the guarantee of financial supply of preschool education according to local conditions according to the level of social and economic development and the development of preschool education in various regions, so as to alleviate the phenomenon of shortage of financial funds for local preschool education.

(3) Strengthening supervision over preschool education funds

Because of the important role of educational funds in the balanced allocation of preschool education, Anhui Province must improve the supervision of kindergarten educational funds to ensure the implementation of educational financial funds. Supervision and administration of the kindergarten education funding is the result of joint efforts of the cooperation, the departments of the government in order to improve the efficiency of the preschool education funds supervision, the Anhui province should construct a scientific and reasonable multiple cooperative governance regulation mechanism, this mechanism is based on preschool education department leadership, comprehensive finance, statistics, and other departments of mutual cooperation and preschool education funds to carry out supervision and management work. In the supervision process to refine the rights and responsibilities of each department, clear management objectives, so as to effectively play the advantages of each department, to ensure the supervision of preschool education funds.

References

[1] Jiang SHENGxiang. Allocation and Flow of Preschool teachers in China from the Perspective of Balanced Education [J]. Preschool Education Research, 2011(07): 26-31.

[2] Chen J. The path of balanced development of urban and rural preschool education from the perspective of comparative Institutional Analysis [J]. Journal of Sichuan Normal University (Social Science Edition), 2021(03): 119-126.

[3] Ke L. Demand logic and realistic choice of public service supply in preschool education [J]. Journal of Education Science, hunan Normal University, 2021(02): 114-122.

[4] Lai Xiaoqian, Chen Ronghui. Evaluation and difference analysis of urban and rural preschool education resource investment performance: Based on DEA and Malmquist Index Model [J]. Journal of Educational Research, 2021(01): 16-24.

[5] Chen Chen, Zhu Xiaohong. Research on allocation of preschool education resources in Hohhot [J]. Journal of Inner Mongolia Normal University (Education Science Edition), 2020(06): 62-67.

[6] Fu Xiaoxin, Li Lin. [J]. Education Observation, 2020(24): 5-8.

[7] Li Fang, Congratulations, Jiang Yong. Research on the characteristics and Countermeasures of financial investment in Preschool education in China: Based on the perspective of international Comparison [J]. Journal of Education, 2020(01): 43-54.

[8] Liu Q. A comparative study on the investment level of preschool education between China and OECD countries. Education Economics Review, 2019(03): 72-86.

[9] Liu Yan. The development path and direction of inclusive kindergarten [J]. Education Research, 2019 (03): 25-28.