Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company’s public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Accessibility, affordability, accountability, sustainability and social justice of early childhood education in China: A case study of Shenzhen

Sha Xiea,⁎, Hui Lib

a Normal College, Shenzhen University, China
b Department of Educational Studies, Macquarie University, Australia

ARTICLE INFO

Keywords:
Early childhood education reform
Document analysis
Case study

ABSTRACT

This study examined the accessibility, affordability, accountability, sustainability, and social justice of early childhood education (ECE) services in Shenzhen, China, using Li et al.'s (2017) '3A2S' framework. Government documents and secondary data during the past decade were collected and evaluated. The results indicated that: (1) the ECE services have improved in the dimensions of accessibility, affordability, accountability, sustainability, and social justice; (2) more efforts should be made in increasing fiscal budget into ECE services and ensuring the quality of the ECE services; and (3) the government needs to take up more responsibilities to strike a balance between market force and governmental regulation. Implications and suggestions are also included.

1. Introduction

Early childhood education (ECE) services in China have witnessed a ‘Great Leap Forward’ since the central government issued the Outline of National Plan for Medium-and-Long-term Education Reform and Development (2010–2020) (‘the Plan’) and the State Council’s Several Opinions on the Current Development of Early Childhood Education (‘the Opinions’) in 2010. To achieve the target of universalization of ECE by 2020 set by the Plan and the Opinions, all levels of Chinese governments have made great efforts to accelerate the development of ECE services, making it a ‘beloved princess’ in the country during the past decade. Ten years have passed, and now it is the time to evaluate whether the goals set by the Plan have been fully achieved or not. Shenzhen is the first and most developed market economy in China and has gone through the most radical changes in ECE services even before 2010. For instance, the public kindergartens were demolished, giving way to the surge of private kindergartens, and then were ordered by the national and provincial government to re-emerge. Therefore, in this study, we evaluated the case of Shenzhen with the ‘3A2S’ framework (Li, Park, & Chen, 2017) to explore the accessibility, affordability, accountability, sustainability and social justice of the ECE services and to provide implications for policymaking and service improvements.

1.1. National policies about ECE services in China

Preschool services in China consist of two levels: nurseries provide childcare services to children aged 0–3, and kindergartens provide education and care services to children aged 3–6. This paper will focus on the policies and services for the children of 3–6 years, which could be labelled as ‘early childhood education’ (ECE). Before the establishment of the market economy system in the 1990s, ECE services were provided by public kindergartens as labor protection and welfare to staff members (Zeng, 2006). However, since the 1990s, the aggressive policy – ‘government retreats but private-sector advances’ (國退民進) – has been rigorously implemented with the aim to promote private kindergartens. Accordingly, the public kindergartens were closed down, suspended, merged, transformed and sold, shifting the responsibility of funding and monitoring ECE from the government to the private sector (Li, Yang, & Chen, 2016). This radical transformation has made the ECE services more privatized and market-oriented and has brought about the following consequences: (1) a drastic decrease in national financial budget planning for ECE, which was less than 1.3% of the entire education budget in 2005, leaving the local governments to sponsor the remaining public kindergartens; (2) a substantial weakening in the planning, policymaking and supervision of ECE due to the cutting down of the number of officials in the ECE departments in all government levels; (3) a flourishing of private kindergartens to meet the demands in major cities; and (4) a significant decline in both the quantity and quality of ECE in China (Li & Wang, 2008; Li et al., 2016; Zhu & Wang, 2005). All these consequences have jointly caused the ‘3A’ problems to the ECE services in China: (1) accessibility problem (入园难), as it is very tough to get into a kindergarten, especially those public
kindergartens which are usually of higher quality; (2) affordability problem (入园贵), as some kindergartens charge much higher than universities; and (3) accountability problem (入园难), as most private kindergartens are terrible in quality with no necessary supervision (Li et al., 2016).

The year 2010 has seen a sharp turn from the extreme marketization of ECE to the balance between public and private kindergartens. Two critical documents marked the prelude to the ‘Great Leap Forward’ era of ECE services in China. The first was the Plan, which acted as the blueprint for China’s education reform and development for 2010 to 2020 and proposed three strategic goals for ECE: (1) basic universal provision of ECE, that by 2020, the gross enrollment rate (GER) for those attending 3-year ECE should reach 70%; (2) greater government responsibilities in developing public kindergartens and supporting private kindergartens; and (3) the strengthening of ECE in rural areas. The second was the Opinions, which prompted governments of all levels to facilitate the development of ECE by increasing financial input to make ECE more affordable, establishing a funding mechanism, strengthening training for kindergarten teachers, and subsidizing young children from poor and needy families (Li et al., 2016).

Following the two key documents, “Three-Year Action Plan for ECE (‘Action Plan’)” in governments of all levels have been launched to encourage the establishment of public kindergartens and to financially support the development of private kindergartens, with the target of tackling the ‘3A’ problems (Li et al., 2016). After the accomplishment of the first round of the Action Plan starting in 2014, the second round of the Action Plan was launched, which aimed to set the public kindergartens as well as the affordable private kindergartens (普惠性民办幼儿园) as the backbone of the ECE sector. In the third and final round of the Action Plan starting in 2017, the government aimed to reach 85% GER by 2020 and to make more than 80% of the children enrolled in affordable kindergartens (which include both public and private kindergartens). In 2018, the educational authorities reiterated ECE as the start of lifelong learning and as the essential part of public good in the Several Opinions of the CPC Central Committee and the State Council on Deepening Reform and Regulating Development of Preschool Education (中共中央国务院关于学前教育深化改革规范发展的若干意见). In this document, the central government also planned to increase the proportion of children in public kindergartens to over 50% by 2020, and to solve the problems of ‘accessibility’ and ‘affordability’ by requiring the kindergartens affiliated with urban residential communities to be public or affordable private kindergartens. Furthermore, more in-service training at all levels and a quality assurance system were launched.

During the past decade, the ECE services in China have turned from ‘Cinderella’ to ‘beloved princess’ (Li et al., 2016), with public spending in ECE increased in both quantity (RMB 24 billion in 2009 to RMB 367 billion in 2018) and proportion in total education expenditure (from 1% in 2009 to 10% in 2018). Nationally and generally, this has resulted in an increased number of kindergartens, children enrolled in kindergartens and GER in 3-year ECE (see Table 1), alleviating the problem of accessibility. Furthermore, the problem of affordability was reduced by increasing the proportion of public kindergartens (see Fig. 1), and accountability was improved by increasing both teachers’ income and qualifications and by establishing a quality assurance system. However, empirical evidence is needed to ascertain whether all these 2020 targets have been achieved and the ‘3A’ problems have been solved. This study would thus examine the case of Shenzhen, the first and most developed market economy in China.

1.2. Local policies about ECE services in Shenzhen

Shenzhen is the first special economic zone in China (established in 1980) and has since then developed rapidly from a fishing village to a modern city, with its GDP in 2019 ranked the third among cities in China (next to Shanghai and Beijing). Given the ‘reform and open’ spirit in the city, the ECE sector in Shenzhen has gone through more dramatic changes in the past two decades. Since the 1990s, the government retreats but private-sector advances’ policy was rigorously implemented in Shenzhen; thus, the priority has been given to the development of private kindergartens. Furthermore, in September 2006, Shenzhen transformed the public kindergartens into self-sustained businesses and transferred the RMB 50 million budget from public kindergartens to all the 744 kindergartens in Shenzhen. This limited budget for ECE was only 0.7% of the total education expenditure in the city, which is far below the average level of 1.3% in the country (Li, 2006). This transformation was, per se, turning the ECE funding system from government-supported to market-driven, as a response to the rapidly expanding needs driven by the rapidly growing population in the city (Li & Wang, 2008). Therefore, it has received fierce resistance from the teachers in public kindergartens, parents, and scholars, as well as disidence from the provincial and central governments (Li & Wang, 2008; Wang, 2007, 2009). It has also led to the increasing cost of ECE for families and descending quality in both the public-turned-business kindergartens and private kindergartens (Wang, 2009), even though it has achieved universal preschool attendance in Shenzhen.

Since the country turned from the extreme marketization of ECE to the balance between public and private kindergartens in 2010, Shenzhen has forcefully experienced a sharp U-turn. First, it has to keep up with the country’s average level in ECE expenditure, aiming at 5% of the total educational budget by 2015 (Government of Shenzhen, 2010). Second, it has to increase the proportion of children enrolled in public kindergartens from less than 3% in 2010 to at least 50% and the proportion of affordable kindergartens (both public and private) to at least 80% by 2020. Third, it has to meet the fast-climbing demand for kindergartens caused by the ‘two-child policy’ (二孩政策) launched in 2016 as well as the youth-dominated demographic structure of the city. Last but not least, it also has to improve the quality of ECE services, by retaining and recruiting qualified teachers with an above college degree. All these pressing demands imposed by the top-down policy reform in the country and by the bottom-up needs of the population in the city have made the post-2010 ECE reform in Shenzhen ever more challenging. Therefore, Shenzhen has provided an ideal arena to explore the impact of universal ECE policy and to examine the post-2010 developments of ECE services in China. Accordingly, this study aimed to evaluate the accessibility, affordability, accountability, sustainability, and social justice of ECE services in the city with the official data and documents released by the municipal government.

### Table 1

| Year | Number of children enrolled | Number of kindergartens | Gross enrolment rate in 3-year ECE (%) |
|------|-----------------------------|-------------------------|---------------------------------------|
| 2003 | 20,039,061                  | 116,390                 | 37.4%                                 |
| 2004 | 20,894,002                  | 117,899                 | 40.8%                                 |
| 2005 | 21,790,290                  | 124,402                 | 41.4%                                 |
| 2006 | 22,683,509                  | 130,495                 | 42.5%                                 |
| 2007 | 23,488,300                  | 129,056                 | 44.6%                                 |
| 2008 | 24,749,600                  | 133,722                 | 47.3%                                 |
| 2009 | 26,578,141                  | 138,209                 | 50.9%                                 |
| 2010 | 29,766,695                  | 150,420                 | 56.6%                                 |
| 2011 | 34,244,456                  | 166,750                 | 62.3%                                 |
| 2012 | 36,857,624                  | 181,251                 | 64.5%                                 |
| 2013 | 38,946,903                  | 198,553                 | 67.5%                                 |
| 2014 | 40,507,145                  | 209,881                 | 70.5%                                 |
| 2015 | 42,648,284                  | 223,683                 | 75.0%                                 |
| 2016 | 44,138,630                  | 239,812                 | 77.4%                                 |
| 2017 | 46,001,393                  | 254,950                 | 79.6%                                 |
| 2018 | 46,564,204                  | 266,677                 | 81.7%                                 |

Source: Statistical Communique on National Education Development (2003–2019) published on Chinese official website of Ministry of Education.
2. Methods

2.1. The '3A2S' framework

The theoretical framework of '3A2S' (Li et al., 2017) was applied to analyze the post-2010 ECE developments in Shenzhen. 'Accessibility' measures whether every child at the age of 3–6 could easily attend an early childhood setting nearby; 'affordability' refers to the easiness that every family could afford the tuition fees and some exemptions or subsidies are provided to the needy families; 'accountability' refers to the extra fiscal input to improve education quality; 'sustainability' examines whether the policy could be sustainable and supportive to the development of ECE; and 'social justice' denotes equality in the distribution of educational resources across children from various socio-economic backgrounds (Li et al., 2017). The framework has been used to analyze ECE policies in more than Asia Pacific countries and areas with different socio-economic and political contexts that are varying from the most developed (Japan) to the least developed (Nepal) (e.g., Izumi-Taylor & Ito, 2017; Li & Wang, 2014; Li, Wong, & Wang, 2010; Raban & Kilderry, 2017). For example, in Japan where birth rate was low, the government attempted to improve childcare by working with everyone involved in children's lives in order to maintain 3As, which eventually reached sustainability and social justice for all its citizens (Izumi-Taylor & Ito, 2017). This '3A2S' framework has equipped the educational researchers with a comprehensive, effective and useful measure to analyze the ECE policies in Asian Pacific societies and suggested a new research agenda for early childhood education in this rapidly developing region (Li et al., 2017).

2.2. Procedure

The current study was conducted in three steps to complete a triangulated document analysis. First, all relevant documents regarding ECE services in Shenzhen were searched, collected, selected, and identified from the website of educational bureau of the local, provincial and national government. The method of snowballing was also applied during document searching when relevant documents were found in reading. Second, the information and statistics were extracted from the collected documents and analyzed on the five dimensions of the '3A2S' theoretical framework: accessibility, affordability, accountability, sustainability, and social justice. An excel worksheet was created by listing the name of the relevant document in vertical order and the content relating to the five dimensions of the '3A2S' in horizontal order. And finally, the local ECE policies issued since 2010 most relevant to the '3A2S' framework were listed in the Appendix and analyzed using the '3A2S' framework.

2.3. Document sample

Document analysis is a systematic and qualitative approach to review or evaluate documents, with an aim to extract meaning, develop understanding and gain empirical knowledge from the data (Corbin & Strauss, 2014). It is challenging to collect and review all the relevant documents related to the ECE policy in Shenzhen after 2010; we thereby focused on two major sources of data: government documents and secondary data.

2.4. Government documents

Government documents provided the major sources of data and could be obtained from government websites that included the Ministry of Education, the Department of Education of Guangdong Province, the Government of Shenzhen, and the Education Bureau of the Shenzhen Government. The data collected were policies and regulations that informed our research on the development of the ECE policy in Shenzhen after the turning point of 2010. The full list of government documents is shown in the Government Documents Collection Form (see Appendix A) and the documents are coded as G1, G2, and G3, etc.

2.5. Secondary data

Secondary data were those collected by the governments, research institutions, agencies and researchers that provide readily available resources to examine particular hypotheses (Vartanian, 2010). The use of secondary data provides a general understanding of the policy changes over the past decade in a cost-efficient way. The secondary data included in this study was the official statistics, the annual report of education, and the press coverage from websites such as the Statistics Bureau of Shenzhen and the Education Bureau of the Shenzhen Government. Most of the data used were from the bureaus, which were supposed to be reliable. The full list of secondary data is shown in the Secondary Data Collection Form (see Appendix B) and the documents are coded as S1, S2, and S3, etc.

3. Results

The results of the document analysis were categorized and presented according to the framework of '3A2S'.

3.1. Accessibility of ECE services

The accessibility of the ECE services refers to whether children can easily attend an early childhood setting nearby (Li et al., 2017). Before
the turning point of 2010, the gross enrollment rate of children aged 3 to 6 in Shenzhen has already reached more than 90%, which was higher than the national average of 57%. Since 2015, the Shenzhen government has aimed for higher accessibility of more than 98% and that 70 new kindergartens and 20,000 new places should be added each year (G8). In addition, the city population remains young and grows rapidly, with an annual birth rate of more than 20% after the full enactment of the ‘two-child policy’ in 2016 and a natural population growth rate of more than 30% each year (S3). In 2017, the Education Bureau predicted that the city needed to provide 185,000 new places in the next five years as a baby boom is expected in 2021 (S10). In 2018, the number of children in the kindergarten had reached 524,193, surpassing the megacities of Beijing and Shanghai to be the top city with most children in the kindergarten (see Fig. 2). However, an audit report in 2016 revealed that of the 1560 new kindergartens planned to build between 2010 and 2020, only 32% of them were built by the end of 2016. Thus, the city needs to continue expanding new places to cater for the increased number of children aged three to six years old, in order to maintain the high GER of 98% (G18).

Furthermore, a closer look at the distribution of the kindergartens in terms of land area and population indicates a problem of accessibility (Table 2). Among the ten districts of the city, the number of kindergartens per km² varied from 0.05 to 1.92, and the number of kindergartens per 10,000 population ranged from 0.92 to 2.04, indicating that the accessibility problem varies by districts and some children have to travel far to attend kindergarten. In some districts (such as Baoan and Guangming), where children of migrant workers and from lower SES families were dense, the indices mentioned above were usually lower, highlighting the severe problem of accessibility and resulting in large class sizes in some kindergartens (S6), which was far above the class sizes required by the government of less than 25, 30 and 35 children per class for lower, middle and upper classes in quality-graded kindergartens (G23). To tackle this problem, the city has targeted that every residential area should have at least one kindergarten and that in an area of 4500 people there should be at least one kindergarten with more than six classes, to ensure easy access to kindergartens for children (G12, G17 and G19).

Table 2
The distribution of land area, population and number of kindergartens in Shenzhen in 2019.

| District | Land Area (km²) | Population ('000) | Number of Kindergartens | Number of kindergartens per km² | Number of kindergartens per 10,000 population |
|----------|-----------------|-------------------|-------------------------|---------------------------------|-----------------------------------------------|
| Yantian  | 74.99           | 242.9             | 29                      | 0.39                            | 1.19                                          |
| Futian   | 78.66           | 1633.7            | 151                     | 1.92                            | 0.92                                          |
| Luohe    | 78.75           | 1039.9            | 138                     | 1.75                            | 1.33                                          |
| Guangming| 155.44          | 625.0             | 78                      | 0.50                            | 1.25                                          |
| Pingshan | 166.31          | 446.3             | 72                      | 0.43                            | 1.61                                          |
| Longhua  | 175.58          | 1672.8            | 238                     | 1.36                            | 1.42                                          |
| Nanshan  | 187.53          | 1493.6            | 217                     | 1.16                            | 1.45                                          |
| Dapeng   | 295.38          | 153.0             | 15                      | 0.05                            | 0.98                                          |
| Longgang | 388.22          | 2386.4            | 488                     | 1.26                            | 2.04                                          |
| Baoan    | 396.61          | 3257.8            | 386                     | 0.97                            | 1.18                                          |

Note: The data for land area and population were drawn from the Shenzhen Statistics Yearbook (Shenzhen Statistic Bureau, 2019) and the data for the number of kindergartens were drawn from the Shenzhen Education Bureau (Shenzhen Education Bureau, 2019).
in 2015 and

Table 3
countered stiff resistance from the owners of private kindergartens; and solutions to the affordability problem in the city (see Table 3), yet the city chose a 'cheaper' way to solve the problem by supporting the growth of affordable private kindergartens rather than supporting new public kindergartens which required full financial input from the government. Then in 2018, both the national and the provincial governments ordered governments of all levels to increase the percentage of public kindergarten to exceed 50% by the end of 2020 (G17 and G26). The national and provincial government intended to turn those private kindergartens that already received government financial support and have been using government-owned properties for free into public kindergartens once the contract for using the property expires, to improve their quality. However, given the extremely low proportion of public kindergarten in Shenzhen (3.8% against 43.4% of the national level), the local government was nudged onto a hasty path to develop public kindergartens, which ask for more fiscal budget for ECE sector. The Shenzhen government had to complete this difficult mission within two years, thus has adopted the following measures: (1) increasing fiscal input and building new public kindergartens; (2) taking back those private kindergartens affiliated with the residential area (小区配套园) as they used public properties for free and transforming these private kindergartens into public ones once the contract expires; (3) buying back the aforementioned kindergartens before the contract expires with compensation and running them as public ones; and (4) supporting existing public kindergartens to open up new branches (G18, G19 and G20). These efforts, however, have encountered stiff resistance from the owners of private kindergartens; thus, the local government made painful and slow progress (S9 and S10). For instance, only 10% of the eligible young children were enrolled in public kindergartens in 2019, far below the targeted 50% in 2020 set by the central government.

Nevertheless, in addition to increasing the proportion of 'affordable kindergartens', the city has also provided a subsidy to all the kindergarteners (G4). The subsidy is 1500 RMB per year and lasts for three years. Furthermore, children from needy families or with special educational needs are entitled to further subsidy on tuition fees. The policy started in 2012 and has continued since then, aiming to relieve the burden on all families qualified for the subsidy, yet the amount of subsidy hasn't changed since 2012.

3.3. Accountability of ECE services

The accountability of ECE services refers to whether the extra fiscal input improves education quality (Li et al., 2017). In the stream of child care quality research, global quality is determined by the combination of structural and process quality (Cassidy et al., 2005; Phillips & Howes, 1987). The structural quality includes furnishings, group composition and staff qualifications. In contrast, the process quality consists of the “actual experiences that occur in child care settings, including children's interactions with caregivers and peers and their participation in different activities” (Vandell & Wolfe, 2000, p. 3). In general, both structural and process quality of the public kindergartens are far better than those of private ones, resulting from smaller investment by the private owners, lower wages paid to the teachers who had lower qualifications, and lower retention rates (G4). The Shenzhen government has made efforts to improve both structural and process quality in all the kindergartens with particular attention to those affordable private kindergartens.

First, the indicators of structural quality were considered as 'regulatable' indicators thus were easier to achieve through regulatory, licensing and Monitoring and Evaluation (督导) process: (1) teacher-child ratio higher than 1:7 and staff-child ratio higher than 1:9; (2) maximum group size for K1 being 25 children, for K2 being 30 children, and K3 being 35 children; (3) kindergarten principals with at least an associate degree (an undergraduate degree awarded after a course of post-secondary study lasting two or three years at community colleges and some universities), as well as teacher and principal qualifications; (4) at least 85% of the teachers with an associate degree or above; and (5) improvement of facility and equipment standards (G8, G9, G14, G18, and G21).

Second, the less 'regulatable' indicators of the process quality were obtained through the quality assurance system of Monitoring and

| Year | Tuition (in RMB) | Mean   | Max  | Min  | Std  |
|------|------------------|--------|------|------|------|
| 2015 | Public kindergarten | 1,010.55 | 2,920 | 500  | 312.29 |
|      | Affordable private kindergarten | 786.16   | 2,000 | 390  | 297.25 |
|      | Other private kindergarten | 1,029.92 | 8,000 | 338  | 832.15 |
| 2019 | Public kindergarten | 989.88   | 2,100 | 840  | 225.7 |
|      | Affordable private kindergarten | 952.4   | 1,800 | 300  | 257.81 |
|      | Other private kindergarten | 2,050.83 | 27,500 | 450  | 2186.02 |

Fig. 3. The number of new kindergartens in Shenzhen from 2010 to 2018. Source: the website of Shenzhen Education Bureau.
Evaluation and the ensuing four levels of quality grading in descending order: provincial (省一级) , city (市一级), district (区一级) and compliance (主要范围) (G22, G23, and G24). Based on the quality grading, the city would provide a lump-sum reward to those kindergartens that newly achieved provincial or city level grading, with restricted use on improving facility and equipment (70%) as well as teacher training and research (30%) (G4 and G7). If a kindergarten fails to meet the standards during the Monitoring and Evaluation process, it will be given detailed feedback and suggestions to improve their quality and given a second chance of being inspected. However, the Monitoring and Evaluation standard applied to the kindergartens in Shenzhen was issued more than a decade ago, and the detailed results, except for the quality grading, were not publicly available. Currently, public kindergartens have the highest proportion of provincial grade, followed by affordable private kindergartens and other kinds of kindergartens (Table 4). A study among parents in Shenzhen has found that the quality grading as well as whether the kindergarten was public affect parents’ choice of kindergartens (Liu, Chen, & Chen, 2016), which result in higher demand of those public kindergartens, indicating another problem of accessibility.

Third, another pathway to improving accountability was to enhance the quality of kindergarten teachers by (1) ensuring teacher benefits and compensations, especially those in the affordable private kindergartens (as teachers in the public kindergartens usually have higher salaries and bonuses), by requiring the private owners to use 40% of the tuition income to pay teachers’ salaries; (2) providing long-term teaching allowances for those who have worked in the same kindergarten for more than three years, the longer, the more; (3) offering government-sponsored professional training; (4) sponsoring in-service training and workshops to teachers in all kindergartens; and (5) raising the standards for entering the teaching profession by requiring all public kindergarten teachers and 90% of those in the affordable private kindergartens to have at least an associate degree by 2022 (G2-G13, G17 and G18).

### 3.4. Sustainability of ECE services

The sustainability of ECE services examines whether the policy sustains and supports the long-term development of the sector. Before 2010, the whole country and the city of Shenzhen put little effort or attention to the ECE sector, causing the ‘3A’ problems of ECE services. Since 2010, however, the ECE sector has become an essential response of the government from all levels. Instructed by the central government, the Shenzhen authorities increased its fiscal budget on ECE services from 1.43% in 2011 to 4.29% of the total educational expense in 2016, which, however, was still below the target level set for 2015 of above 5%. This poor performance in ECE budgeting was criticized by the local people’s congress in 2016, and the local government has been ordered to increase its financial input in the sector (S6). However, the increase in ECE budgeting was still not stable in the following years, with year-on-year increase reached 59.46%, 0.68%, and 24.29%, in 2017, 2018 and 2019, respectively. And it was expected to increase by 187%, to RMB 10 billion in 2020 to build more public kindergartens. In addition, the Shenzhen government has also set aside funding to provide subsidy for children and teachers, such as offering rewards to kindergartens that achieved a higher-level grading and funding to support master teachers with professional development activities. The ECE policy has, overall, supported the development of the ECE services in the city.

### 3.5. Social justice of ECE services

The last and final dimension of the ‘3A2S’ framework was social justice, which examines whether the educational resources are equally distributed across children from various socio-economic backgrounds. In 2010, the distribution of public kindergartens was mostly inside the former ‘special economic zone’, namely Futian, Luohu, and Nanshan districts and the former town center of Shenzhen, Baoan district. Public kindergartens were usually cheap and of high quality, and children with special educational needs (SEN) by: (1) building up a financial support system to children and family with SEN and subsidize for their tuition fees in kindergartens; (2) encouraging the establishment of special education institutions, especially for preschoolers; (3) supporting existing special schools to establish early childhood education sections; and (4) supporting normal kindergartens to enroll children with a physical disability and to recruit special education teachers for inclusive education (G3, G8, G12, G15, G16 and G20). Overall, the
progress in this dimension is remarkable.

4. Discussion

As the first evaluation of the accessibility, affordability, accountability, sustainability, and social justice of early childhood education services in Shenzhen, this study has found some noticeable progress and problems. Some dilemmas emerged when the local government encountered stiff resistance from the owner of private kindergartens, reflecting the conflicting interests between the educational authorities and the service providers. In particular, raising the proportion of public kindergartens is very challenging to the local government. This section will discuss the major findings and their implications for policymaking and practical improvement.

4.1. Progress in the five dimensions of '3A2S'

This study found that ECE services had progressed in the dimensions of accessibility, affordability, accountability, sustainability, and social justice since 2010. First, the accessibility dimension. In this youth-dominant city with more and more newborns, the accessibility of ECE services is always a challenging and pressing problem to the government, who should not only continuously increase kindergarten places but also carefully plan the locations for new kindergartens. Second, the affordability dimension. The city has started with a high proportion (more than 97%) of private kindergartens in 2010 and thus is facing a serious problem of affordability. With very limited public kindergartens available, most of the families had to bear with the high cost of private kindergartens. Since 2012, the city has provided a subsidy to all the registered kindergarteners. The existing and new private kindergartens have been encouraged to transform into affordable kindergartens by the municipal and district government through providing subsidies and awards, resulting in rocketing number of affordable private kindergartens. Accordingly, the proportion of affordable kindergartens (public kindergartens plus affordable private kindergartens) reached 80% in 2018, alleviating the problem of affordability. Third, the accountability dimension. The problem of accountability cannot be easily solved through subsidies to affordable private kindergartens. Realizing such problem, in 2018, the national government required all cities to increase their proportion of public kindergartens to 50% by the end of 2020. Since then, the city has turned its focus to increasing the proportion of public kindergartens and expanding ECE expenditure accordingly. It has also refined the Monitoring and Evaluation mechanism, granted lump-sum rewards to kindergartens receiving a higher grading, provided long-term teaching compensation to teachers, and increased in-service training and teacher qualifications.

To solve the problems of accessibility, affordability, and accountability, the city needs to increase its fiscal budget in ECE services continuously and to support the healthy development of the sector, leading to the fourth dimension of the framework – sustainability. However, the document analysis indicated that the city had been very reluctant to increase its investment in the ECE sector, keeping the proportion of expenditure in ECE at a low level when compared to other sectors of education as well as the national average. Expanding public kindergartens is considered as a solution to both affordability and accountability, which, however, is a challenging task to the government. This is because 97% of Shenzhen kindergartens were private ones in 2010, and nearly 50% of them should be transformed into public ones in 2020. The owners of those private kindergartens will not easily give up this profitmaking business; therefore, the government will have to pay a sky-high bill to redeem these kindergartens, in addition to setting aside fiscal budget needed to build new public kindergartens. Consequently, it remains in doubt whether the ECE policies can be sustainable in the long run.

4.2. Private versus public: Which is better?

The ECE developments in Shenzhen during the past two decades (2000–2020) could be seen as a pendulum swinging, back and forth, from private-dominated to public-dominated in the source of funding in the sector. The first decade (2000–2010) has witnessed a fiercely debated and resisted argument between the government and the sector, which ended with most of the public kindergartens being sold or transformed (Li, 2006; Li & Wang, 2008; Wang, 2007, 2009). A series of problems in accessibility, affordability, accountability, sustainability and social justice, has been criticized by previous studies that the ECE sector used to be a ‘Cinderella’ (Hong & Chen, 2017; Li et al., 2016). The second decade (2010–2020) has seen a dramatic change to transform private kindergartens into public ones, and remarkable progress has been made in the ‘3A2S’ dimensions. In the first decade (2000–2010), developing private kindergartens was regarded as the ‘penicillin’ by the Shenzhen government; however, in the second decade (2010–2020), transforming them into public kindergartens was treated as the ‘panacea’ by the national government thus the local government had to follow. So, the question is: private versus public, which is better for the development of ECE services in China, especially in Shenzhen?

To address this question, Li et al. (2016) has systematically reviewed the history of ECE development in China and concluded that the destination of Chinese ECE should be borrowing and emulating practices from other countries as well as adopting the ‘public-kindergarten first’ strategy. The first kindergarten established in 1903 in China was a public one, and most of the kindergartens established in the last century were run by the government (Li et al., 2016). Therefore, we tend to agree with the central government of China that public kindergarten should be the dominating mode of ECE services in China as it has better quality and cheaper fees (Xie & Li, 2018). The real challenge, however, is how to perform the impossible magic tricks like a real magician, transforming most of the private kindergartens into public ones by the
end of 2020. The central government has ordered the Shenzhen government to achieve the target of running 50% of the kindergartens, given the fact that only 3.8% was public in 2018.

To complete this challenging and pressing task, the local government has, in areas with limited or no space available for building a new kindergarten, tried different measures to lure and to encourage the owners of private kindergartens to return those kindergartens using government-owned properties for free back to the government, with compensation. However, the conflicts of interest and even tensions between the local government and the private owners have emerged. In addition, even though the owners would like to return the kindergartens eventually, the municipal and district governments might have difficulty in allocating enough budget to redeem them and adequate human resources to manage and run these returned kindergartens. Currently, these private-turned-public kindergartens were under the management of a nearby public primary school or became a branch of existing public kindergartens. Teachers’ wage from these previously private kindergartens have increased instantly, increasing the retention rate. However, more efforts and fiscal budget are needed in continuing in-service training to raise the quality of these private-turned-public kindergartens. Furthermore, finance monitoring mechanisms are required as these kindergartens start to receive public funding. All these difficulties have jointly put the Shenzhen government into a dilemma: to be or not to be, that is the question. To find a way out of this dilemma, the local government needs to review, reflect, and rethink their plan and strategies very carefully. Given the global trend and national goal of shifting focus from accessibility to quality and from care to education (Schleicher, 2019; State Council of China, 2018), the Shenzhen government should definitely increase ECE fiscal investment, build new public kindergartens, provide support to teacher professional development, establish quality assurance and finance monitoring mechanisms, and enhance support to needy families. Only in this way, the ECE services could, gradually and eventually, become accessible, affordable, accountable, sustainable and socially just. This process is long-lasting and painstaking, as there is no shortcut or magic formula.

5. Conclusions, limitations, and implications

This study found that the ECE services in Shenzhen has improved in the dimensions of accessibility, affordability, accountability, sustainability, and social justice during the past decade. However, more efforts should be made to increase the annual fiscal budget into the sector and to ensure the quality of ECE services. Even though promoting public kindergarten might be the correct direction, the government needs to better plan the long-term development and to better strike a balance between market force and governmental regulation.

There are limitations to this study that warrant mention, due to the design of document analysis. First, the study relied mainly on document analysis, which is limited and subjective to the authors’ preferences. The sample might not be representative of the overall process of the ECE reform in Shenzhen. Second, most of the secondary data were collected from official websites, which might not be reliable as statistics released by governments in China are usually challenged. Finally, the city of Shenzhen is a special economic zone in China, and its ECE reform process has its unique pathway which is still changing. The use of the ‘3A2S’ framework to analyze such complicated and dynamic process may lack comprehensiveness.

Nevertheless, this case study has got some interesting findings that might contribute to theoretical development and practical improvement. Theoretically, this study has found that the ‘3A2S’ framework could be a useful tool to analyze the rapid development of ECE services and to provide a comprehensive framework to settle the debate about ‘public versus private kindergarten’. It provides a theoretical perspective to systematically analyze the ECE policies under the background of rapid changes in the ECE sector around the globe. It also proves to be a useful framework to analyze policies in different socio-economic and political contexts, which provides researchers with a strong tool to undertake comparative studies in the future. Practically, this study found that turning from market-driven, private-dominated to government-driven, public-dominated is totally dependent on the efforts made by the local government. Shenzhen should inject more fiscal budget, establish a quality assurance mechanism, set up regulatory requirement, and build up a full coverage subsidy system to achieve a satisfactory level of accessibility, affordability, accountability, sustainability, and social justice. In addition, the Shenzhen experience also has implications for the development of ECE not only in the Greater China region but also internationally. First, the nonprofit private kindergartens should be promoted and subsidized by the government, whereas the for-profit ones should not. The swing from private to public in Shenzhen has proved that merely subsidizing for-profit private kindergartens could not solve the ‘3A’ problems. The target of 80% affordable kindergartens and 20% other kindergartens set by the national government is appropriate in developing economies in order to provide an accessible, affordable, accountable, sustainable, and socially just early childhood educational system. Second, buying back or taking back the private kindergartens might not be the best solution to increase the proportion of public kindergartens, even though it is an effective way in the areas with limited or no space for building a new kindergarten. Instead, governments should continue setting new public ones and nonprofit ones. Unexpectedly, the lockdown caused by the COVID-19 pandemic has made most of the private kindergartens suffering, and many of them have returned their kindergartens to the government to reduce cost in rent and salary, making it less expensive for the local government to redeem these kindergartens. Perhaps, it is the time for the policymakers and the private owners to rethink the same question: how to take care of the wellbeing of our next generation with sustainability and social justice? The ‘3A2S’ framework can help them rethink this question.

CRediT authorship contribution statement

Sha Xie: Writing - original draft. Hui Li: Conceptualization, Writing - review & editing.

Declaration of Competing Interest

The authors declared that there is no conflict of interest.

Appendix A. Government documents collection

| No. | Government Documents                                                                 | Level | Source                                                                 |
|-----|--------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------|
| G1  | Outline of Shenzhen Plan for Long-Term Educational Reform and Development (2010–2020) | City  | http://www.sz.gov.cn/lqz/gjhz/gjhzjshfzgjhz/201504/t20150421_2861024.htm |
| G2  | Interim Measures of the Early Childhood Education Monitoring and Evaluation (2010-2020) | City  | http://old.moe.gov.cn/publicfiles/business/htmlfiles/moe/a6500/201205/xzkg_136728.html |
| G3  | Plans for the Development of Shenzhen Early Childhood Education (2012-2013)          | City  | http://www.sz.gov.cn/jyj/qt/tzgg/201205/t20120509_1911990.htm            |
Appendix B. Secondary data collection

| No. | Secondary Data                                                                 | Type                  | Source                                                                 |
|-----|-------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------|
| G4  | Interim Measures of the Management of the Special Funds for Shenzhen Early Childhood Education | Statistical report   | http://www.szrd.gov.cn/szrd_dtxx/zjdc/content/post_16028899.html       |
| G5  | Interim Measures of the Management of Shenzhen Affordable Kindergartens 深圳市普惠性幼儿园管理暂行办法 | Statistical report   | http://www.szhj.gov.cn/gzfw/jyxx/jyjgg/zzgg/content/post_2963737.html |
| G6  | Implementation Measures for the Long-Term Teaching Allowances for Shenzhen Kindergarten Staff (Trial) 深圳市幼儿园保教人员长期从教津贴实施办法 | Audit report          | http://www.szeb.sz.gov.cn/home/jyfw/fwxsjz/xqjy/yeymd/content/post_7253942.html |
| G7  | Implementation Details for Shenzhen Early Childhood Education Special Fund Reward and Subsidy Projects 深圳市学前教育特殊奖励和资助项目实施办法 | Audit report          | http://www.szeb.sz.gov.cn/home/jyfw/fwxsjz/xqjy/yeymd/content/post_7253942.html |
| G8  | Plans for the Development of Shenzhen Early Childhood Education (2015–2017) 深圳市学前教育发展行动计划(2015–2017) | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G9  | Interim Implementation Measures for Continuing Education for Shenzhen Kindergarten Staff 深圳市幼儿园保教人员继续教育实施办法 | Audit report          | http://www.szeb.sz.gov.cn/home/jyfw/fwxsjz/xqjy/yeymd/content/post_7253942.html |
| G10 | The Twelfth Five-Year Plan for Shenzhen Education Development 深圳市教育发展“十三五”规划 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G11 | Interim Management Measures for Shenzhen Early Childhood Education “Gardening Project” Master Workshops 深圳市学前教育“苗圃工程”名师工作室暂行管理办法 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G12 | The Thirteenth Five-Year Plan for Shenzhen Education Development 深圳市教育发展“十四五”规划 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G13 | Implementation Measures for Shenzhen Kindergarten Staff 深圳市幼儿园保教人员长期从教津贴实施办法 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G14 | Management Measures for Shenzhen Educational Inspector 深圳市督学管理办法 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G15 | Opinions on the Implementation of Deepening and Strengthening Sponsor System 深入推进和加强扶持系统实施意见 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G16 | Enhancement Plan for Shenzhen Special Education Phase Two 深圳市特殊教育发展“十四五”规划 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G17 | Opinions on Deepening Reform and Support Quality and Affordable Early Childhood Education 关于进一步深化改革促进学前教育普惠优质发展的意见 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G18 | Plans for the Development of Shenzhen Early Childhood Education (2015–2017) 深圳市学前教育发展行动计划(2015–2017) | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G19 | Implementation Measures for Governance of Kindergartens Affiliated with Urban Residential Communities 深圳市小区配套幼儿园治理工作实施方案 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G20 | Management Measure for Shenzhen Public Kindergartens 深圳市公办幼儿园管理办法 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G21 | Standards for Setups of Shenzhen Early Childhood Education Institution 深圳市学前教育机构设置标准 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G22 | Indicators for Passing Monitoring and Evaluations on Shenzhen Kindergarten Compliance Kindergartens (Trial) 深圳市规范化幼儿园督导验收指标体系(试行) | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G23 | Plan for Guangdong Kindergarten Monitoring and Evaluation 广东省幼儿园督导评估方案 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G24 | Standards for Standardized Urban Kindergarten (Trial) 关于规范化城市幼儿园的办学标准(试行) | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G25 | Action Plan for Promoting Healthy Development of Guangdong Affordable Early Childhood Education 广东省促进学前教育普惠健康发展行动计划 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G26 | Several Opinions on Deepening Reform and Regulating Development of Preschool Education 关于学前教育深化改革和规范发展的若干意见 | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G27 | Three-Year Plan for the Phase Two Development of Guangdong Early Childhood Education (2014–2016) 广东省发展学前教育第二期行动计划(2014–2016年) | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |
| G28 | Three-Year Plan for the Phase Three Development of Guangdong Early Childhood Education (2017–2020) 广东省发展学前教育第三期行动计划(2017–2020年) | Audit report          | http://www.sz.gov.cn/zfgb/2015/gb923/content_mpost_4977226.html         |

Appendix B. Secondary data collection

| No. | Secondary Data                                                                 | Type                  | Source                                                                 |
|-----|-------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------|
| S1  | Announcement of Basic Information of Shenzhen Kindergartens 2019–2020年深圳市幼儿园办园基本信息公告 | Statistical report   | http://szeb.sz.gov.cn/home/jyfw/fwxjsj/xqjy/yeymd/content/post_7253942.html |
| S2  | Announcement of Basic Information of Shenzhen Kindergartens 2015–2020年深圳市民办幼儿园办园基本情况公告 | Statistical report   | http://szeb.sz.gov.cn/home/jyfw/fwxjsj/xqjy/yeymd/content/post_7253942.html |
| S3  | Shenzhen Statistical Yearbook 2019 深圳市统计年鉴2019 | Statistical report   | http://tjj.sz.gov.cn/attachment/0/418/418268/6765070.pdf               |
| S4  | Assessment Report on Shenzhen Early Childhood Education 深圳市学前教育调研报告 | Assessment report    | http://www.szrd.gov.cn/szrd_dtxx/zjdc/content/post_16028899.html        |
| S5  | Audit Report on Shenzhen Kindergarten Budget Execution and Other Fiscal Revenue and Expenditure 2018年深圳市2018年度市级预算执行及其他财政收支审计工作报告 | Audit report          | http://www.szrd.gov.cn/szrd_dtxx/zjdc/content/post_16028899.html        |
| S6  | Announcement of the Auditory Results on the Shenzhen Early Childhood Education Special Fund Spending | Audit report          | http://www.sz.gov.cn/cn/xseqg/zfxxj/sjbg/content/post_16028899.html     |
References
Cassidy, D. J., Hestenes, L. L., Hansen, J. K., Hedge, A., Shim, J., & Hestenes, S. (2005). Revisiting the two faces of child care quality: Structure and process. Early Education & Development, 16(4), 505–520.
Corbin, J., & Strauss, A. (2014). Basics of qualitative research: Techniques and procedures for developing grounded theory (4th ed.). Thousand Oaks, CA: Sage.
Government of Shenzhen (2010). Decision of Shenzhen Municipal Government on promoting education reform and development and taking the lead in realizing education modernization. China: Shenzhen.
Hong, X., & Chen, J. J. (2017). The changing landscape of early childhood education in Mainland China: History, policies, progress, and future development. In H. Li, E. Park, & J. J. Chen (Eds.). Early childhood education policies in Asia Pacific (pp. 31–50). Singapore: Springer Singapore. https://doi.org/10.1007/978-981-10-1528-1_2.
Izumi-Taylor, S., & Ino, Y. (2017). Japanese ECE: Four abilities (accessibility, affordability, accountability, and sustainability) that result in social justice. In H. Li, E. Park, & J. J. Chen (Eds.). Early childhood education policies in Asia Pacific (pp. 73–86). Springer.
Li, H. (2006). 深圳市公办性幼儿园现状网络民意调查及分析 [Transformation of kindergartens in Shenzhen: Internet view of the problems and solutions]. 幼儿教育 [Early Childhood Education] [Educational Sciences], 346(10), 13–21.
Li, H., Park, E., & Chen, J. J. (2017). Early childhood education policies in Asia Pacific. Springer.
Li, H., & Wang, C. X. (2008). Transformation of public kindergartens in Shenzhen. Chinese Education and Society, 41(2), 41–70. https://doi.org/10.2753/CED1061-1924410204.
Li, H., & Wang, D. (2014). Understanding the 15-year free education policies in China: An online study of four cases. International Journal of Chinese Education, 3(2), 205–267.
Li, H., Wong, J. M. S., & Wang, C. X. (2010). Affordability, accessibility, and accountability: Perceived impacts of the Pre-primary Education Vouchers in Hong Kong. Early Childhood Research Quarterly, 25. https://doi.org/10.1016/j.ecresq.2009.09.004.
Li, H., Yang, W., & Chen, J. J. (2016). From “Cinderella” to “beloved princess”: The evolution of early childhood education policy in China. International Journal of Child Care and Education Policy, 10(1), 2. https://doi.org/10.1186/s40723-016-0018-2.
Liu, G., Chen, Y., & Chen, W. (2016). Research on the preschool education opportunities of children with different family backgrounds from the perspective of education equity-based on the investigation data of Shenzhen. Education & Economy, 5, 23–29.
Phillips, D. A., & Howes, C. (1987). Indicators of quality in child care: Review of research. Quality in child care: What does research tell us (Vol. 1). Washington, DC: National Centre for Early Childhood Development.
Raban, B., & Kilderry, A. (2017). Early childhood education policies in Australia. In H. Li, E. Park, & J. J. Chen (Eds.). Early childhood education policies in Asia Pacific (pp. 1–30). Springer.
Schleicher, A. (2019). Helping our youngest to learn and grow: Policies for early learning. Paris. https://doi.org/10.1787/9789264313873-en.
State Council of China (2018). Several Opinions of the CPC Central Committee and the State Council on Deepening Reform and Regulating Development of Preschool Education. Beijing. Vandell, D. L., & Wolfe, B. (2000). Child care quality: Does it matter and does it need to be improved? Madison, WI: University of Wisconsin-Madison Retrieved from http://aspe.hhs.gov/hsp/ccquality00/ccqual.htm.
Varianian, T. P. (2010). Secondary data analysis. Oxford University Press.
Wang, H. (2007). 幼儿教育还是“教育”吗——从深圳的公办性幼儿园说开去 [Is preschool education still education—on the reform of Shenzhen’s government-owned kindergartens]. 学前教育研究 [Studies in Preschool Education], 145(1), 6–10.
Wang, H. (2009). 深圳市公共园转企现象透视 [Transformation of public kindergartens in Shenzhen]. 学前教育研究 [Studies in Preschool Education], 8, 17–21.
Xie, S., & Li, H. (2018). Perspectives on readiness for preschool: A mixed-methods study of Chinese parents, teachers, and principals. Children and Youth Services Review, 95, 19–31. https://doi.org/10.1016/j.childyouth.2018.10.031.
Zeng, X. D. (2006). 我国幼儿教育由单位福利到多元化供给的变迁 [Changes concerning our country’s early childhood education from organization-run welfare to diversified funding sources]. 幼儿教育 [Early Childhood Education] [Educational Sciences], 15, 1–4.
Zhu, J., & Wang, X. C. (2005). Contemporary perspectives in early childhood education. Greenwich, CT: Information Age.