

# ***The Impact of Early Childhood Education's Increasing Trend Towards Younger Ages on the Early Education Industry in China's Economically Developed Areas: A Perspective from the Heckman Curve***

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**Abstract:** The trend towards younger ages in early childhood education has become one of the new trends in children's education in China. Based on Heckman's Curve theory, this paper analyzes the intrinsic relationship between the trend towards younger ages in early education and Heckman's Curve, as well as their impact on the early education industry in China's economically developed regions. From the perspective of the Heckman Curve, families in economically developed areas are increasingly valuing early education, and the trend towards younger ages is a real-world confirmation of Heckman's Curve. The study finds that the early education industry is facing the dual challenges of market structure adjustment and consumer upgrading. In such a market environment, early education brands need to continually adjust their educational models and pricing strategies to better meet market demands and enhance brand influence and competitiveness. With increasing market competition and diverse consumer demands, early education brands should strengthen the development of teaching content, improve teaching quality and service, focus on brand marketing and market promotion, continuously improve customer satisfaction and loyalty, and achieve sustainable development and long-term success. Only through constant innovation and optimization can they remain competitive in a fierce market, winning trust and support.

**Keywords:** Heckman Curve, Early Childhood Education at Younger Ages, Economically Developed Regions in China, Investment Psychology, Early Education Industry

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## **1. Introduction**

The proverb "See the adult in the child by age three [1], see the old by age seven" emphasizes the significant impact of early childhood behavior on a child's future. Everyone experiences a memory-sensitive period during childhood, where the younger the age, the easier it is to form memories, and the older one gets, the more difficult it becomes. As age increases, this brain space can be filled with

irrelevant things, which repels new experiences. Therefore, an individual's early development is considered crucial for the accumulation of lifelong cognitive skills, representing a key developmental period for learning capabilities and cognitive abilities [2]. Neuroscience and child cognitive science suggest that early life involves rapid brain development, synaptic pruning, and myelination, representing the stage of highest brain plasticity. In 2000, economist James J. Heckman introduced the Heckman Curve, which posits that the return on investment for early education from ages 0-3 is 1:18; it decreases to 1:7 for ages 3-4; it halves again for elementary education to 1:3; and falls directly to 1:1 for university education, indicating lower returns on educational investments as age increases. Based on Heckman's life-cycle perspective on the return on human capital investments, the trend towards younger ages in early education is very apparent in China's economically developed areas. This study will explore the impact of this trend on the early education industry in these regions from the perspective of Heckman's life-cycle.

## **2. Research**

### **2.1. The Impact of Early Childhood Education from the Heckman Curve Perspective**

As illustrated in Figure 1, the Heckman Curve demonstrates that the earlier the educational investment, the higher the rate of return, with a return rate of 1800% for education before the age of three [3]. Modern psychological research has found that development from ages 0 to 3 has a significant impact on an individual's lifelong outcomes; the first three years determine 50% of intellectual level; development up to the age of eight contributes another 30%; and the final 20% is completed between the ages of eight and seventeen. Economists predict that early education acts as a lever for social development and individual progress. Statistics show that providing one year of early education can increase a child's future salary by 2.53 times, and investment in preschool education can yield a fourfold return on investment for society. In economically developed regions, where the population generally has higher cultural and educational levels and more advanced educational concepts, high-quality individuals familiar with educational theories such as the Heckman Curve and early brain development rules [4] are prevalent. Unlike rural and less developed areas that may overly focus on genetic differences while overlooking the importance of early development, the actual differences in an individual's first three years largely depend on the environment and the quality of early education. The educational micro-environment formed between children and their parents directly affects the direction, level, and speed of a child's intellectual development [5]. Today's educational elites in developed areas recognize that with the increasing intensity of 'involvement' in the education sector, the key places of education are no longer just universities, high schools, or elementary schools, not even kindergartens, but are focused on the early years after a child's birth, in the cradle itself. In other words, the hand that rocks the cradle is the hand that rules the world. Influenced by the mentality of "ensuring children win at the starting line," the focus of education has shifted from preschool education in kindergartens to even earlier. Family education perceptions are gradually shifting towards early education. This shift has directly led to the trend of lowering the age at which early education starts, with parents placing greater emphasis on their children's early education, hoping that early educational interventions will better prepare their children for future competition. Consequently, early childhood education has become a burgeoning field, increasingly gaining attention and support from parents.

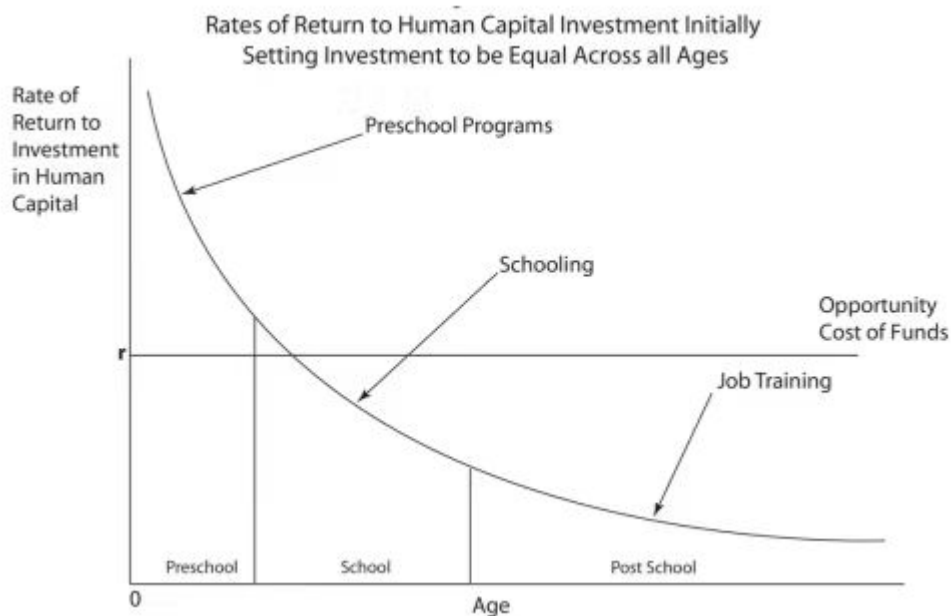


Figure 1 Source: Carneiro & Heckman (2003)

## 2.2. The "Investment" Psychology Behind Early Childhood Education

### 2.2.1. Motivation Study

Early childhood education as an educational investment, according to Albertini and Radl, serves as a tool for social class reproduction. Over the past few decades, against the backdrop of increasing income inequality in most industrialized countries, parents' investment in their children's education has been viewed by Napolitano et al. as a way for middle-class parents to safeguard their children's social status. It is considered by Skirbekk as a means for upward mobility within the middle class, and by Zuanna as a strategy to address status anxiety.

The current market mechanism plays a crucial role in the socio-economic landscape, emphasizing the input-output ratio—that is, a certain amount of input should yield an equal or greater return. Under the influence of this market mechanism, parents are increasingly applying this efficiency formula to family education, viewing the major family decision of raising children from an economic and resource perspective. The rational economic mindset leads parents to expect some returns from the time, energy, and money invested in their children's growth, tying the children to their parents' plans as a "major investment project" expected to appreciate in the future. No one wants their "long-term investment" to yield nothing. Thus, seeing their child succeed is viewed as a goal by parents, and the child's growth is formatted as a potential career for the parents. Moreover, parents also seek to compensate for their own regrets and deficiencies through their children, projecting their aspirations and desires onto them. Thus, planning and investment in family education are not only for the children's future but also to satisfy parental psychological expectations.

Furthermore, the inherently competitive nature of the market has become more apparent. The intense societal competition communicated through the market instills a fear in parents, making them reluctant to see their children become part of the future's "outsiders." Excessive focus on children's future growth and negative forecasts of these internal factors lead parents into the psychological trap of "investment." In the field of economics, theories of parent-child relationships, such as those proposed by Matthias Doepke and Fabrizio Zilibottiz, distinguish two types of parental motivations: altruism and paternalism. Altruistic parents are characterized by full empathy with their children,

recognizing individual differences and autonomy among children, respecting their self-awareness without imposing their will, maintaining a relatively equal relationship. In contrast, paternalism emphasizes parental authority, advocating for restriction and control over children's autonomy. The "investment" psychology is a representative trait of paternalism, where early education at younger ages is based on parental cognition and self-assertion, ignoring the child's intrinsic thoughts, starting from a self-serving perspective.

### **2.2.2. Relationship Study Between "Investment" Psychology and Early Childhood Education**

Influenced by "investment" psychology, both parents and the labor market favor "high-quality" or "high-value" children, and education is generally seen as a direct way to enhance a child's quality or value. The Heckman Curve corroborates that, with a fixed investment amount, the return on investment is inversely related to age. Under the assumption of rational economic behavior, investment-oriented parents naturally seek higher returns on educational outcomes, thereby starting early childhood education earlier and increasing investments in it [6], leading to the trend of lowering the age at which early education begins.

## **2.3. The Impact of Early Childhood Education Trends in Economically Developed Areas of China**

### **2.3.1. SWOT Analysis of the Early Education Industry in China's Economically Developed Areas**

#### **2.3.1.1. Strengths**

**Broad Market:** The early childhood education industry has tremendous market potential in China, especially in economically developed areas with a higher number of infants and toddlers. This means early education institutions can find more potential customers in these areas. The vast infant and toddler market, coupled with parents' increasing focus on children's education, promises significant growth opportunities for the early education industry in the future.

**Expanding Demand:** As of now, the number of children aged 0-6 years in China has exceeded 100 million. Although the birth rate has declined, the total population continues to grow steadily. Additionally, in economically developed areas, the new generation of parents places great emphasis on their children's education. The demand for early childhood education is expected to increase significantly [7]. Compared to mothers born in the 1980s, those born in the 1990s place more value on early childhood education and are more likely to enroll their children in early education programs and expose them to more educational resources at an early stage, believing it positively impacts their children's growth: early education helps establish good study habits and social skills, laying a solid foundation for future development. Thus, mothers born in the 1990s show a more proactive attitude towards their children's education and are willing to invest more time and effort into their children's comprehensive education. For children aged 0-1 years, mothers born in the 1990s are 6.1% more likely to enroll their children in early education programs compared to mothers born in the 1980s, demonstrating an earlier awareness of early education and a willingness to expose their children to education sooner.

**Diverse Early Education Services:** Today's early education services are increasingly diverse, including music, reading, and language development programs, among others. These varied early education options meet parents' personalized needs for their children's cognitive development and intellectual training. Parents can choose the most suitable early education programs based on their children's interests and personality traits, helping them develop comprehensively in all areas. Different types of early education services can help children establish good learning habits and

cognitive abilities, promoting their all-around development and better preparing them for future learning and life.

#### **2.3.1.2. Weaknesses**

**Shortage of Quality Teachers:** There is a shortage of quality teaching talent in the existing early education industry, and the costs for recruiting and training preschool teachers are high [8].

**High Rental Costs:** Rent in economically developed areas is high, and early education requires suitable spaces for learning and resting. Finding appropriate locations is challenging, and the costs for rent and facility renovation are significant.

#### **2.3.1.3. Opportunities**

**Market Recovery Post-Pandemic:** The early education industry experienced a peak in investment in 2018, followed by a sharp decline in 2020 due to the COVID-19 pandemic, with investment numbers and amounts plummeting to just 20 cases and 2.78 billion yuan. In the post-pandemic era, as China's economy gradually recovers and per capita income levels steadily increase, the early education industry is expected to continue growing. Therefore, the expanding demand and rising consumer purchasing power in the early education market present a positive outlook.

**Integration of Online Education:** With the growth of digital technology, online education has flourished, gradually integrating with traditional education to provide children with more diverse and enriched learning experiences. The limitations of traditional education are increasingly being compensated by the advantages of online education, allowing children to access more resources and interactive opportunities online, expanding their learning spaces and methods.

**Customized Services:** The new consumer trend towards personalized services means that early education can offer tailored services based on each child's interests and unique personality, allowing them to independently choose their learning content and schedule, thereby better developing their potential.

#### **2.3.1.4. Threats**

**Intense Industry Competition:** The competition within the industry is fierce, and existing competitors need to offer more quality and competitive educational services to stand out.

**Shrinking Customer Base:** The number of children in economically developed areas is high, but the birth rate is very low [9], indicating a shrinking future customer base, which is unfavorable for further industry development.

#### **2.3.2. Impact**

In the field of early childhood education, the development trend for brand institutions is to integrate Eastern and Western elements. Compared to directly importing foreign curricula, current early education brands are more focused on implementing localized strategies in service and operation [10]. For example, international brands like Kindermusik and My Gym target the high-end market and, while maintaining the characteristics of their international curricula, have made certain localized adjustments. Local brands like Oriental Baby fully adopt mainstream domestic educational philosophies and conduct independent research and development. Current early education brands tend to combine domestic needs with foreign high-quality resources to achieve comprehensive innovation. Take Sporty Baby as an example, which is one of the most successful Sino-Western early education brands in China. It caters to children aged 0 to 6, introduces advanced international early education concepts, and has developed seventeen types of courses that include three major features and five



systems, establishing the most comprehensive and rich age-segmented curriculum system in the industry. Its teaching materials and facilities meet international standards. In China's economically developed areas, the market share of such Sino-Western early education brands is gradually increasing, posing a challenge to international brands that have dominated first- and second-tier cities. This may force international brands to adjust their educational models and relatively high pricing strategies to better adapt to the current situation and needs of China's early education market.

Compared to the previous situation where the early education industry and many well-known early education brands were mainly concentrated in first- and second-tier cities in China's economically developed areas, the penetration rate in third- and fourth-tier cities was low. Today, the early education industry is gradually deepening its market in economically developed areas, seeking new growth opportunities. With the development of early childhood education, the penetration of early education will become increasingly widespread, and the early education industry will gradually expand to third- and fourth-tier cities and even underdeveloped areas in economically developed regions to meet the diverse needs of families for early education.

Under a competitive background, the industry's concentration further expands, and early education brands tend to be of higher quality. As the industry matures, early education institutions that lack mature educational concepts, offer rudimentary teaching content, have low brand impact, and lack teaching talent will gradually be at a disadvantageous competitive position. Under the market's survival of the fittest rules and exit mechanisms, industry concentration will gradually increase. Maintaining brand recognition requires long-term investment in curriculum content development, advertising, and marketing, necessitating substantial investments of manpower, material resources, and capital. This also prompts early education brands to explore more scientific educational philosophies, devise more reasonable teaching plans and content, accelerate the improvement of institutional facilities, enhance their competitive ability, focus more on curriculum innovation, high-quality research and development, to provide children and parents with high-quality course experiences, and improve customer satisfaction and course renewal rates.

### 3. Discussion

Based on the Heckman curve theory, this study conducts an in-depth analysis of the motivations behind early childhood education (ECE) low-age, and its impact on the early childhood education market in economically developed areas of China through literature research methods. The results of this study clearly demonstrate the direct relationship between ECE low-age and parents' "investment" psychology, and furthermore, ECE low-age also has a qualitative relationship with variables such as social competition.

Through the analysis of ECE low-age, the rationality of the Heckman lifecycle theory is indirectly verified. The Heckman lifecycle theory proposes that the lifecycle of a product or industry undergoes four stages: introduction, growth, maturity, and decline. In economically developed areas of China, as parents increasingly value early childhood education, ECE low-age has rapidly developed, driving the early education industry towards maturity. ECE low-age not only enhances the quality and level of early childhood education but also provides more development opportunities for early education institutions. Therefore, studying the promotion role of ECE low-age in the early childhood education industry is of great significance for understanding the trends in the educational market in economically developed areas of China. It can provide decision-making references for existing early education brands and has theoretical guiding value for their future educational models and development strategies.

Although this study has made some findings, there are still certain limitations, such as the lack of experimental quantitative research and the brief research period. Future research could consider incorporating experimental studies using qualitative and quantitative research methods. Further

research into other potential influencing factors on ECE low-age and refining the understanding of the trends and potential impacts of ECE low-age on the early education industry market changes would be beneficial.

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