

# On the Current Situation and Problems of Investment in High-tech Industry in Anhui Province

Shijuan Han, Lijing Guo\*

School of Economics, Anhui University of Finance and Economics, Bengbu, Anhui, China

\*Corresponding author email: guolijing0379@163.com

**Abstract:** Through the analysis of high-tech industry investment in Anhui Province, it is found that in 2021, the total amount of high-tech industry investment in Anhui province continues to grow and the scale of investment continues to expand, which plays a more and more obvious role in stimulating the economy. However, the development of various cities in the province is not coordinated. Most of the investment resources flow to Hefei, Wuhu and Ma'anshan. The investment in high-tech industries in other cities accounts for a relatively low proportion. In terms of industries, the investment in high-tech industries in Anhui Province is mainly concentrated in the pharmaceutical manufacturing industry, ignoring the development of information chemicals manufacturing industry. Compared with the surrounding provinces and cities, Anhui Province has some problems, such as small investment scale, low R&D investment and insufficient innovation ability. In view of the problems existing in high-tech industry investment, this paper puts forward relevant suggestions from four aspects: improving the investment environment, adjusting the investment scale, increasing R&D investment and improving innovation, so as to promote the development of high-tech industry investment in Anhui Province.

**Keywords:** High-tech industry; R&D; Investment structure.

## 1. Introduction

High tech industry is a key area of national industrial development. Since the reform and opening up, the state has actively issued policies to promote the development of high-tech industry. The total investment in China's high-tech industry is growing rapidly, but the structural contradictions are still acute. The impact of the COVID-19 on the global industrial structure makes the adjustment of the investment structure of high-tech industries more urgent [1].

The high-tech industry has made outstanding contributions to the promotion of national economic development, and plays an important role in many industries in China. In recent years, the growth rate of China's high-tech industry investment has been higher than that of the whole society's fixed asset investment. In 2020, investment in high-tech industries will increase by 10.6%, 7.7 percentage points higher than the growth rate of fixed asset investment in the whole society. In the high-tech industry segment, the investment growth rate of high-tech manufacturing and high-tech service industries is significantly higher than the average growth rate of manufacturing and service industries. In 2020, the investment in high-tech manufacturing industry will increase by 11.5%, 13.7 percentage points higher than the average growth rate of investment in manufacturing industry, and continue to maintain a significant lead in the growth rate of overall investment in manufacturing industry. Investment in high-tech services increased by 9.1%, 5.5 percentage points higher than the average growth rate of investment in services. At present, the proportion of high-tech industry investment in China's fixed asset investment is still low (less than 10%).

In the future, as the investment growth gap continues, the proportion of high-tech industry investment will continue to increase, and its contribution to investment growth will continue to increase. Increasing investment in high-tech industry is the need of national economic development. Anhui Province should seize the opportunity and unswervingly take

the road of rejuvenating the province through science and technology. Therefore, it is particularly important to analyze the current situation of high-tech industry investment in Anhui Province, find out the existing problems and explore solutions.

## 2. Analysis on the Current Situation of Investment in High-tech Industry

The increase in investment in high-tech industries indicates the importance a country or region attaches to the development of science and technology. With the rise of strategic emerging industries, high-tech industries have become a new driving force for China's current economic development [2]. We should vigorously develop science and technology, use science and technology to drive the economy, and finally achieve national prosperity and people's prosperity. Through the overall situation of high-tech industry investment in Anhui Province, investment in different regions and cities, investment in different industries and comparison with surrounding provinces and cities, this paper comprehensively analyzes the current situation of high-tech industry investment in Anhui Province, and highlights the determination of Anhui Province to adhere to the path of rejuvenating the province through science and technology and to promote high-quality economic development.<sup>[2]</sup>

### 2.1. Analysis on the Overall Situation of High-tech Industry Investment

For the analysis of the overall situation of high-tech industry investment in Anhui Province, we can understand the current situation of high-tech industry investment in Anhui Province as a whole. The following analyzes the overall situation of high-tech industry investment from three aspects: the amount of high-tech industry investment and its growth rate, the investment structure and the change of investment subjects.

### 2.1.1. The Total Investment Increased and the Growth Rate Decreased

Over the past decade, Anhui Province has gradually increased the amount of investment in high-tech industries, and paid more attention to high-tech industries, which fully reflects the driving role of high-tech industries in economic development. From 2019 to 2021, the investment in high-tech industry will still maintain a certain growth rate during the period of being impacted by the epidemic. The investment in high-tech industry increased from 70.06 billion yuan in 2012 to 145.314 billion yuan in 2016, and then to 325.328 billion yuan in 2021. The amount doubled in five years and more than four times in ten years. In terms of the growth rate of its investment, the fastest growth rate was in 2012 and 2016, reaching 39.89% and 40.83% respectively. After 2017, the growth rate tends to be about 25%. However, due to the impact of the epidemic in 2019, the growth rate of investment in high-tech industries will drop to 13.40%, and the growth rate

will drop to less than 10% in 2020. In recent years, China's high-tech industry has faced external factors such as severe challenges from abroad and hidden dangers of domestic epidemics. At the same time, it has also faced internal factors such as structural transformation and periodic delay, which have caused double pressure to the industry. However, China still insists on developing high-tech industry to ensure high-quality economic development. Anhui Province has also actively responded to the call, increasing investment in high-tech industries every year, adhering to the supply side structural reform as the main line and the reform and opening up as the driving force to improve the development quality of high-tech industries. The growth rate of investment in high-tech industries in Anhui Province has recovered to more than 10%, making the investment in high-tech industries in fixed assets increase by 13.9%, 4.5 percentage points faster than the total investment. See Table 1 for specific data.

**Table 1.** High tech industry investment from 2012 to 2021

Year	Investment in high-tech industry (100 million yuan)	Growth rate compared with the previous year (%)
2012	700.62	39.89
2013	870.03	24.18
2014	891.89	2.51
2015	1031.83	15.69
2016	1453.14	40.83
2017	1844.20	26.91
2018	2296.03	24.50
2019	2603.70	13.40
2020	2856.26	9.70
2021	3253.28	13.90

Data source: China Economic and social big data research platform, science and Technology Department of Anhui Province

### 2.1.2. The Scale of Investment Continues to Expand

While making every effort to ensure the steady and sustained growth of investment in high-tech industries, Anhui province continues to expand the scale of investment in high-tech industries, improve the quality and efficiency of investment, and accelerate the pace of industrial structure adjustment. From 2011 to 2020, the provincial government and the provincial science and technology department have continuously increased their investment in high-tech industries. The number of enterprises in high-tech industries and the number and proportion of enterprises with R&D activities are on the rise. The number of high-tech enterprises

exceeded 1000 in 2014. The number of enterprises with R&D activities has also increased from 187 in 2011 to 1017 in 2020. The vast majority of high-tech enterprises have begun to invest in R&D and continue to make innovation breakthroughs. In terms of growth proportion, the number of enterprises with R&D activities increased from 32.58% in 2011 to 59.75% in 2020. The number of enterprises and the number and proportion of enterprises with R&D activities have increased. It can be seen that the overall number of high-tech industry investment enterprises in Anhui Province is growing, and the proportion of high-tech enterprises with R&D and innovation has also increased. See Table 2 for specific data.

**Table 2.** Changes in high-tech enterprises from 2011 to 2020

Particular year	Number of enterprises	Number of enterprises with R&D activities	Proportion (%)
2011	574	187	32.58
2012	744	264	35.48
2013	841	308	36.62
2014	1036	380	36.68
2015	1198	489	40.82
2016	1398	596	42.63
2017	1427	629	44.04
2018	1456	661	45.40
2019	1466	870	59.35
2020	1702	1017	59.75

Data source: China Economic and social big data research platform

From the perspective of the change in the number of R&D personnel and R&D funds of high-tech enterprises, the R&D

personnel and funds of the province also showed a significant increase from 2011 to 2020. In 2011, the province invested

21.46 billion yuan in scientific and technological research and development, and the output patents ranked third in China, up 9 places compared with 2010. Among them, the number of R&D personnel in high-tech industry is 8394, and the R&D investment in high-tech industry is 2.607 billion yuan. In 2014, R&D personnel exceeded 20000, and R&D funds increased to 4.189 billion yuan. In 2018, the number of R&D

personnel in the high-tech industry reached 35512, 4.2 times the number of R&D personnel in 2011, and the R&D fund exceeded 10 billion yuan for the first time. According to statistics, in 2020, the number of R&D personnel in high-tech industry exceeded 40000, reaching 40869, a new record. R&D expenditure increased to 16.628 billion yuan, an increase of 32.97% over 2019. See Table 3 for specific data.

**Table 3.** R&D personnel and R&D funds of high-tech industry from 2011 to 2020

Year	Number of R&D personnel (person)	R&D expenditure (100 million yuan)
2011	8394	26.07
2012	14725	25.18
2013	16324	33.30
2014	21167	41.89
2015	22601	57.66
2016	27634	68.28
2017	31573	79.66
2018	35512	106.01
2019	39414	125.05
2020	40869	166.28

Data source: China Economic and social big data research platform

### 2.1.3. The Proportion of Investors Keeps Changing

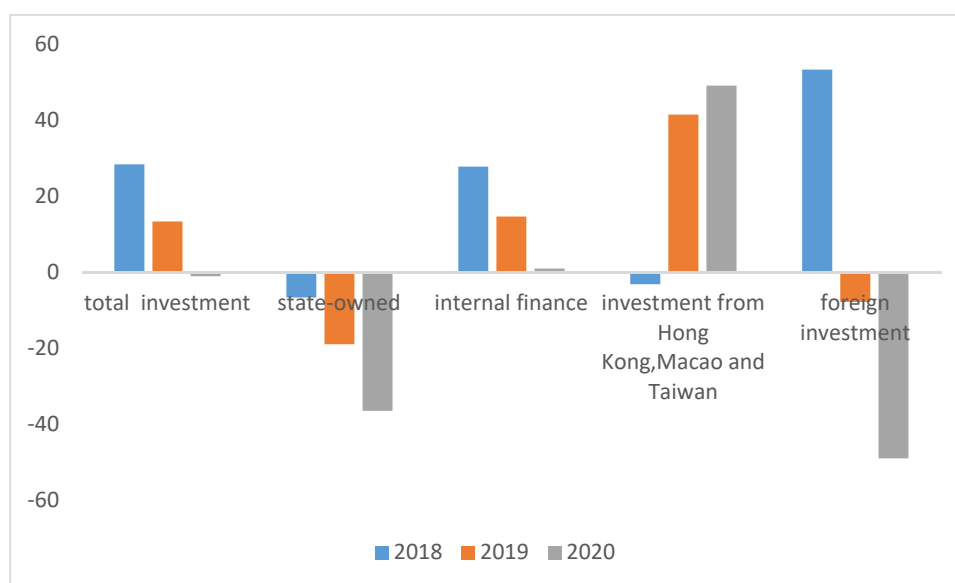
The development of high-tech industry is bound to encounter a cyclical and cyclical slowdown, which is inevitable in Anhui Province and even the whole country. Therefore, the investment in high-tech industry continued to increase in 2018, but it has been declining since 2019. In 2018, the investment growth rate was still 28.4%, but by 2019, it

was less than 20%, only 13.4%. In 2020, due to the impact of the epidemic, industries and economies at home and abroad will be greatly impacted, so the investment growth rate will not increase but decrease, which is -1%. The investment rate of high-tech industry in Anhui Province for three consecutive years from 2018 to 2020 is shown in the table below. See Table 4 and figure 1 for specific data.

**Table 4.** Investment rate of high-tech industries in Anhui Province from 2018 to 2020 (Unit: %)

Year	Total investment growth	State-owned	Domestic investment	Investment in Hong Kong, Macao and Taiwan	Foreign investment
2018	28.4	-6.6	27.8	-3.1	53.3
2019	13.4	-18.9	14.7	41.5	-7.8
2020	-1.0	-36.4	1.0	49.1	-48.9

Data source: China Economic and social big data research platform



**Figure 1.** 2018-2020 high tech industry investment rate

As can be seen from the chart, from 2018 to 2020, the investment rate of high-tech industries in Anhui Province is decreasing year by year, including state-owned investment, domestic investment, Hong Kong, Macao and Taiwan investment and foreign investment. By 2020, only the

investment rate of Hong Kong, Macao and Taiwan will remain on the rise. Although the domestic investment rate is declining year by year, it will still be increasing by 2020. The state-owned investment rate has shown a downward trend since 2018, and has been negative growth. Great changes

have taken place in foreign investment from 2018 to 2019, from a positive growth of 53.3% in 2018 to a negative growth only one year later, with a value of -7.8%, which is closely related to the Sino US trade war launched in 2018. By 2020, another epidemic impact has been added, which has reduced the foreign investment rate to -48.9%, and basically half of the foreign investors have left the Chinese industry. The investment rate of high-tech industries in Anhui Province has also followed the subsequent decline in this regard. As far as Anhui Province is concerned, the state-owned and foreign investors have reduced the amount of investment to varying degrees very early. China began to withdraw its investment in 2018, while foreign investment began in 2019.

## 2.2. Investment Status of High-tech Industries in Different Cities

Although the investment in high-tech industries in Anhui Province is increasing, the investment in high-tech industries in various cities tends to be different. This part analyzes the growth rate of high-tech industry investment and the situation of projects under construction in various cities, so as to compare and find the differences in the development of high-tech industry investment in various cities [3].

R&D expenditure is the expenditure for various research and experimental development, and is an important indicator to measure the investment in high-tech industries in various cities. In 2019, the R&D expenditure of Anhui Province totaled 75.4 billion yuan, ranking 11th in China. Among the

16 cities in Anhui Province, Hefei, Wuhu and Ma'anshan have received a total of 46.394 billion yuan of R&D funds, accounting for 61.53% of the total amount of the province. Among them, Hefei accounted for 38.69% of the R&D funds in the province. However, Huangshan City, Bozhou City, Huainan City and other regions have only about 1 billion yuan, which shows that the distribution of R&D funds in Anhui Province is quite different. From the perspective of growth rate, the growth rate of most cities in Anhui Province in 2019 was more than 20%. Among them, the R&D funds in Huangshan and Chizhou increased particularly rapidly, even reaching more than 40%, but the growth rate in Bengbu was only 5.6%, and the R&D funds in Huainan decreased by 23.4%. By 2020, the R&D expenditure of all cities will be increasing, with an average growth rate of 17.89%. The growth rate of Chuzhou and Bengbu is relatively slow. The R&D expenditure of Hefei and Wuhu is much higher than that of other cities in Anhui Province.

In 2020, in terms of specific cities, the number of high-tech enterprises' investment is on the rise. Most of the enterprises' investment is concentrated in Hefei, accounting for one third of the province, and Wuhu City ranks second. As we all know, Hefei and Wuhu are economically developed cities in Anhui Province. Their strong economic strength makes it easier to attract investment, which is consistent with the reality. However, the economy of Huaibei, Bozhou, Suzhou, Huainan and Chizhou is relatively underdeveloped, the number of enterprise investment is relatively small, and the development is relatively slow. See Table 5 for specific data.

**Table 5.** R&D investment of cities and regions from 2019 to 2020

Region	2019			2020		
	R&D expenditure (100 million yuan)	Growth rate	Number of invested enterprises	R&D expenditure (100 million yuan)	Growth rate	Number of invested enterprises
Whole province	754.0	16.2	6636	883.2	17.1	8559
Hefei	291.76	13.7	2549	353.5	21.2	3331
Huaibei	16.74	22.6	112	20.3	21.4	150
Bozhou	10.54	27.9	120	12.9	22.4	179
Suzhou	11.02	25.2	134	13.0	17.9	186
Bengbu	48.55	5.6	310	52.4	8.0	394
Fuyang	23.22	29.1	297	28.1	20.8	372
Huainan	11.61	-23.8	117	13.8	19.2	160
Chuzhou	50.63	20.2	437	53.2	5.1	600
Lu'an	15.55	20.1	175	18.3	17.4	250
Ma'anshan	60.62	24.3	489	70.8	16.7	586
Wuhu	111.56	13.3	850	125.3	12.3	1038
Xuancheng	29.59	27.3	302	33.0	11.4	380
Tongling	28.1	20.3	215	33.1	17.8	260
Chizhou	10.31	40.7	113	13.0	25.8	153
Anqing	25.67	26	279	32.0	24.7	354
Huangshan	8.55	49.6	137	10.6	24.1	166

Data source: Science and Technology Department of Anhui Province

## 2.3. Investment Status of High-tech Industries by Industry

High tech industry investment is divided into high-tech manufacturing industry and high-tech service industry. The analysis of investment in different categories of industries is conducive to understanding the investment distribution and development of different industries of high-tech industry, and facilitating the adjustment of investment structure.

From the data available in the industry, from 2018 to 2020, Anhui's high-tech manufacturing industry invested in the development of new product projects and expenditure projects in five major manufacturing industries, namely, pharmaceutical manufacturing industry, electronic and communication equipment manufacturing industry, computer and office communication equipment manufacturing industry, medical equipment and instrumentation manufacturing industry, and information science manufacturing industry,

showing different development trends.

Pharmaceutical manufacturing industry accounts for a large share of investment in high-tech manufacturing industry. From 2018 to 2020, the new product development projects and expenditure in the pharmaceutical manufacturing industry showed a trend of first decreasing and then increasing, but the number of development projects and expenditure of medical instruments and meters increased year by year. As the basic support for communication and the development of digital economy in the era of big data, the two major industries of electronic communication bank and equipment manufacturing, computer and office equipment manufacturing also show an increasing trend in their investment funds and the number of development projects year by year. The development expenditure of information chemicals manufacturing industry in Anhui Province

accounts for a relatively low proportion, and its amount is reduced year by year. The number of new product development projects generally remains small. It can be seen that Anhui Province has a large investment in pharmaceutical related industries, and the industry development is relatively mature. During the epidemic period, Anhui "Zhifei" vaccine also made important contributions to the prevention and control of the epidemic. Electronic communication equipment manufacturing and computer office equipment manufacturing also account for a large proportion of Anhui's high-tech industry investment, providing guarantee for the infrastructure construction of Anhui Province. The investment in the information chemicals manufacturing industry is low, and there are few new product development projects. See Table 6 for specific data.

**Table 6.** Development of new products in high-tech manufacturing industry from 2018 to 2020

Industry	Investment	2018	2019	2020
		Pharmaceutical manufacturing	Number of new product development projects	1517
	New product development expenditure	231945	221607	266831
Electronic and communication equipment manufacturing	Number of new product development projects	2193	2525	2947
	New product development expenditure	766258	854134	1209394
Computer and office equipment manufacturing	Number of new product development projects	471	569	646
	New product development expenditure	108038	139981	168884
Medical equipment and instrument manufacturing	Number of new product development projects	485	647	807
	New product development expenditure	64552	75223	100895
Information chemicals manufacturing	Number of new product development projects	8	10	9
	New product development expenditure	4710	2718	1103

Data source: China Economic and social big data research platform

In 2019, the investment in fixed assets in most sub industries of the high-tech service industry is in a negative growth state. Among them, the investment in scientific research and technology services increased by -13.2%, the information transmission, computer services and software industries increased by -8.6%, and the leasing and business services industry increased by -5.3%, which were the industries greatly affected by the epidemic. As the high-tech service industry was severely damaged in 2019, the investment in various industries of the high-tech service industry achieved a high growth rate in 2020. The information transmission, computer service and software industries increased by 89.6%, realizing a positive growth in the investment rate and a substantial increase in the amount of investment. The leasing and business service industry grew by 18.3%, and the investment in this industry began to pick up, adapt to the epidemic and start the industry recovery. Investment in scientific research and technical services increased by 37.5%, and investment gradually recovered.

#### 2.4. Comparison of High-tech Industry Investment in Surrounding Provinces and Cities

This part analyzes the high-tech industry investment between Anhui Province and surrounding provinces and cities, and compares the differences and deficiencies between Anhui Province and other provinces and cities in high-tech industry investment. In the context of rejuvenating the country through science and technology, the government and people of Anhui Province have made concerted efforts, and all the goals and tasks to be achieved by the provincial Party committee and the provincial government have been successfully completed.

The development of the province's high-tech industry has made a good start in the "14th Five Year Plan" and achieved rapid growth of the high-tech industry. However, although our province is actively investing in the investment and development of high-tech industries, our province has long been a large agricultural province, which is different from other economically highly developed provinces in terms of high-tech industries. Due to the lack of congenital conditions, our province has obvious weaknesses in high-tech investment compared with developed provinces.

##### 2.4.1. Differences in the Growth Rate of Total Investment

From the trend of each province and year, the investment in high-tech industries fluctuated greatly from 2018 to 2020 due to the impact of the COVID-19. Among them, investment in high-tech industries in Shanghai, Jiangsu, Zhejiang and Jiangxi still maintained a good growth rate. In particular, the growth rate of investment in high-tech industries in Jiangsu Province reached 71.20% in 2019 and that in Shanghai reached 61.3% in 2020, which played a great role in stimulating the local economy during the epidemic. In 2018, the investment in high-tech industries in Fujian showed negative growth, and maintained a relatively stable growth level in 2019 and 2018. Shanghai, Jiangxi and Shandong have all experienced a turning process from the slowdown of investment growth to further growth, which reflects that their investment in high-tech industries has declined and then continued to recover after the impact of the epidemic. According to the data of Anhui Province, the growth rate of investment in high-tech industry has been decreasing at an average annual rate of 15% over the past three years, and the overall level of investment in high-tech industry is also in the middle and lower reaches of surrounding provinces and cities

with rapid development. See Table 7 for specific data.

**Table 7.** Growth rate of total investment in surrounding cities from 2018 to 2020

Region	2018	2019	2020
Shanghai	48.0	19.1	61.3
Jiangsu	18.8	71.2	4.5
Zhejiang	25.7	18.5	12.5
Anhui	28.4	13.4	-1.0
Fujian	-15.2	17.0	16.2
Jiangxi	30.7	18.1	26.5
Shandong	17.3	-10.0	38.1

Data source: China Economic and social big data research platform

#### 2.4.2. Differences in Growth Rate of Investors

From the perspective of investors, during 2018, state-owned investment tends to be in Shanghai, Jiangsu, Jiangxi and other places. Zhejiang, Anhui and Fujian all show negative growth, of which Fujian has the most serious negative growth. From 2018 to 2020, the state-owned investment in Anhui province continued to show negative growth for three years. Although Shanghai had a short negative growth in 2019 due to the impact of the Sino US trade war, it soon eased. By 2020, even if it was impacted by the COVID-19 virus, the growth rate was still positive, with a value of 26.5%. The high-tech industrial base of economically developed provinces such as Shanghai, Jiangsu and Zhejiang is larger than that of Anhui, and the growth rate is also stable and positive. It can be seen that the congenital

underdevelopment of Anhui has a certain impact on state-owned investment, which makes it show a great gap compared with Shanghai and other places.

The trend of foreign investment has dropped significantly. In 2018, it is easier for foreign investment to choose Jiangxi, Anhui and other places, while Shandong and Shanghai show negative growth. Although the growth rate of foreign investment in Anhui Province reached a record high of 53.3% in that year, it suddenly dropped to 7.8% in 2019 and -48.9% in 2020. Jiangxi Province is also similar to Anhui Province in terms of foreign investment rate. Although it more than doubled in 2018, it quickly fell to -5.3% in 2019. Unlike Anhui Province, it rebounded in 2020. In contrast to Anhui Province, Shanghai's foreign investment rate in 2018 was -5.3%, more than doubling between 2019 and 2020. See Table 8 for specific data.

**Table 8.** Change of investment entity from 2018 to 2020 (Unit: %)

Region	2018				2019				2020			
	State-owned	Domestic	Hong Kong, Macao, Taiwan	Foreign	State-owned	Domestic	Hong Kong, Macao, Taiwan	Foreign	State-owned	Domestic	Hong Kong, Macao, Taiwan	Foreign
Shanghai	213.4	82.8	-3.7	-5.3	-19.2	-6.2	40.6	116.8	26.5	31.6	-13.9	138.6
Jiangsu	87.3	23.1	17.0	4.6	71.7	88.7	12.7	40.2	29.5	1.4	42.8	0.2
Zhejiang	-25.6	26.2	18.9	25.9	8.1	18.7	64.0	3.5	27.7	13.3	5.7	11.2
Anhui	-6.6	27.8	-3.1	53.3	-18.9	14.7	41.5	-7.8	-36.4	1.0	49.1	-48.9
Fujian	-40.0	-20.3	19.0	20.1	-28.4	21.8	-15.0	7.4	43.4	14.4	39.9	14.0
Jiangxi	102.4	29.9	-13.6	110.3	23.0	19.1	-0.3	-5.3	69.2	24.8	217.7	11.2
Shandong	7.5	22.1	15.7	-25.0	36.5	-9.9	-31.5	5.3	51.2	38.1	6.6	53.4

Data source: China Economic and social big data research platform

### 3. Problems in high-tech Industry Investment

Although Anhui provincial government pays more and more attention to the investment and development of high-tech industry, there are still many problems, such as imperfect investment environment, small and uneven investment scale, low R&D intensity, low input-output rate and so on. The specific analysis is as follows:

#### 3.1. The Investment Environment of High-Tech Industry Is Not Perfect

There are many uncertainties in high-tech industry investment in Anhui Province. First, in terms of policy environment, due to the high investment and high risk characteristics of high-tech industry, the risk of investment failure is high and the cost is high. However, venture capital has few policies on capital management and early warning mechanism, resulting in the imperfect guarantee of high-tech industry investment. Insufficient publicity of policies and treatment on talent introduction and uneven regional

distribution have led to a shortage of technical talents in some regions and insufficient R&D achievements of high-tech industrial products. Second, in terms of economic environment, compared with other provinces and cities in the Yangtze River Delta, the investment and local financial expenditure on science and technology are at a low level, and there is room for improvement in the number of high-tech enterprises and the number of contracts signed. Third, in terms of technology environment, Anhui Province mainly depends on the purchase of domestic technology to improve the scale of high technology in the province. Although it has also been introduced, the investment funds are far less than that of the purchase of domestic technology, and the investment is very unstable. In addition, after the introduction of high technology, the expenditure on digestion is obviously insufficient, accounting for an average of about one third of the funds for the purchase of technology, even reaching one tenth in the past two years. Anhui province attaches importance to the introduction of high technology but ignores the absorption of high technology. On the whole, the investment environment of high-tech industry in Anhui Province is not perfect and the market is not mature enough.

### **3.2. The Investment Scale Is Small and the Investment Distribution Is Uneven**

The high-tech industry in Anhui Province started late, the market development is not perfect, and the industry is still in the initial stage of development. Its proportion is not obvious, its position is not prominent, and its scale is not large in all industries of economic development in Anhui Province. The number of influential high-tech leading enterprises in Anhui Province is small, and there are problems of small investment scale and uneven distribution. In terms of investment scale, although the high-tech industry in Anhui Province has indeed developed vigorously in recent years vertically, it is obviously insufficient horizontally compared with Beijing, Shanghai, Jiangsu and other provinces. In 2021, there were more than 37000 high-tech enterprises in Jiangsu Province, but the number of high-tech enterprises in Anhui Province just exceeded 11000. Due to historical and geographical factors, the investment scale of high-tech industry in Anhui Province can not be compared with that of developed provinces and cities, and there is a large gap. In addition, in terms of the distribution of high-tech investment, the high-tech industries in Anhui Province are mainly concentrated in Hefei, and the three brothers Wuhu, Chuzhou and Ma'anshan have another share, which leads to the lack of funds and resources in the rest of the province and the lack of investment and development. On the whole, the high-tech industry in Anhui province lacks industrial clusters with core competitiveness and can not resist market risks, which is mainly reflected in the insufficient number and small scale of large-scale leading enterprises, and the scattered and unbalanced regional distribution of industries.

### **3.3. R&D Intensity Is Low, And There Is A Big Gap with Economically Developed Provinces and Cities**

R&D expenditure and its proportion in GDP are important indicators to measure the scale of a country's scientific and technological activities and the level of scientific and technological investment. They are also important contents to reflect China's independent innovation ability and the process of building an innovative country. In 2020, the domestic R&D expenditure in China totaled 464.9 billion yuan, while Anhui province accounted for only 3.3%, which still lags far behind the 74.3 billion yuan in Jiangsu Province and 36.8 billion yuan in Zhejiang Province.

In 2021, 149 "little giant" enterprises will be added in Anhui Province and 172 in Jiangsu Province. Whether it is the internal expenditure of R&D funds or the number of "little giant" enterprises, although it seems that there is a gap between the expenditure and the number of enterprises, the core is the lack of independent R&D capacity caused by the low R&D intensity. Anhui province lacks independent R&D capability and core technology in the high-tech field, and the core technology, equipment and facilities required by the industry cannot form a complete set of matching and perfect technology platform. As the central region, the economic development is relatively slow, there are few ways to enjoy external resources, the ability to attract investment is insufficient, and the government's investment in R&D funds is insufficient, resulting in a large gap between the high-tech investment in Anhui Province and the developed provinces [4].

### **3.4. The Innovation Ability Is Insufficient, And the Input-Output Efficiency Needs to Be Improved.**

In 2021, the fiscal expenditure of Anhui Province reached 759.2 billion yuan, an increase of 1.6% over the previous year. The fiscal expenditure on science and technology of Anhui Province was 41.55 billion yuan, accounting for 5.47% of the fiscal expenditure. Anhui province did not pay enough attention to science and technology investment. The lack of financial support for the high-tech industry led to the R&D level falling behind, which had a great impact on its development. By comparing the technical efficiency, scale efficiency and returns to scale between Anhui Province and the surrounding provinces and cities, it can be seen that the input-output efficiency of Anhui Province in the central region is at a medium level. However, in the Yangtze River Delta region, from the investment in R&D funds to the authorization of invention patents, the turnover of technology contracts is at a backward level, and the economies of scale in Anhui Province are also increasing. That is, insufficient investment leads to insufficient innovation ability, which leads to the failure of technical efficiency to reach the optimal level. Therefore, increasing investment and improving technological innovation ability is conducive to the further development of innovation and the region [5].

## **4. Suggestions**

### **4.1. Improve Policies and Regulations, Establish Early Warning Mechanism and Improve Investment Environment**

By improving the policy environment related to the high-tech industry, establishing an early warning mechanism to reduce the investment risk of the high-tech industry and improve the return on investment of the high-tech industry. Increase government expenditure on science and technology, increase the income of high-tech talents, and increase the introduction of high-tech talents in some regions, so as to drive economic development, narrow the regional economic development gap, and improve the investment policy and economic environment of high-tech industries. We will further improve the rules for attracting investment in high-tech industries, establish a high-tech industry system evaluation mechanism, and relax the application and registration processes for high-tech enterprises according to actual needs. Enhance the strategic position of investment promotion, and take the optimization of investment environment as one of the key tasks of high-tech industry, so that high-tech industry investment has a relatively complete process and guarantee in terms of policies and regulations, investment promotion, talent introduction, structural adjustment and risk early warning. Increase the digestion and absorption of funds and investment in high-tech industries, give full play to the role of high-tech industries in promoting the economic development of the province, and avoid the introduction of technologies that cannot be used reasonably. Reasonably guide funds and ensure the reasonable use direction of funds [6].

#### **4.2. Expand the Scale of Investment and Balance the Industrial Distribution of Cities in the Province**

Anhui Province should continue to expand the scale of investment in high-tech industries, so as to increase the proportion of financial expenditure in the high-tech field in the total financial expenditure and further increase the output value of high-tech industries. Create and create a series of high-tech service platforms and high-tech service enterprises. The high-tech service platform refers to the high-tech support platforms mainly including development, commissioning, testing, and other intellectual property application service platforms such as inquiry, purchase, management, investment, etc., form a high-tech enterprise cluster with leading enterprises as the core and small and medium-sized enterprises as the assistance, and advocate the formation of enterprise alliances, and explore Chinese foreign cooperative alliances. In addition, in view of the uneven distribution of high-tech enterprises in various cities in Anhui Province, Anhui Province should issue more support policies to help the underdeveloped areas in Northern Anhui to optimize the industrial layout of high-tech service industry and promote the development of advantageous industries in key and hierarchical ways, realize the collaborative upgrading of technological innovation and management innovation of high-tech enterprises [7].

#### **4.3. Increase R&D Investment and Narrow the Gap with Economically Developed Provinces and Cities**

The most important thing for the transformation and upgrading of high-tech industry is to improve the R&D intensity. R&D investment has a significant positive impact on the performance of high-tech industry. Anhui government should increase R&D investment, mainly increasing R&D internal funds. Only with sufficient funds can we have the capital to develop high-tech industries. Make use of the high-end technology of universities and scientific research institutions both inside and outside the province, adopt a joint way to increase the introduction and development of high technology, further promote the process of achievement transformation, and strive to ensure the high-quality development of high-tech industries in the province. Establish and improve the R&D investment mechanism. Most of the R&D investment in Anhui Province flows to large-scale or state-owned enterprises. It is difficult for small-scale enterprises to obtain R&D funds, which further exacerbates the gap between enterprises of different sizes and seriously affects the stable and balanced development of high-tech industries. In addition, while actively striving for national and provincial financial financing, all Dadi cities should also increase investment, support the establishment and promotion of scientific and technological innovation pilot projects, encourage more private capital to enter the pilot projects, and set up various innovative investment institutions to become a strong backing for the investment and financing of the pilot projects.

#### **4.4. Increase Talent Introduction and Technology Investment to Improve Innovation Ability**

The technological innovation achievements of high-tech enterprises have low timeliness, which can assist high-tech enterprises to significantly improve the input-output efficiency of technological innovation. The first step to improve the innovation ability is to vigorously carry out investment attraction and talent attraction, and take "double recruitment and double attraction" as the "first battlefield" of economic work. Only by attracting enough talents and funds can the R&D level be improved. Anhui Province can appropriately strengthen the publicity of attracting talents, improve the treatment of talents, create a good innovation atmosphere, a variety of innovation forms and rich innovation activities, enhance everyone's innovation awareness, and improve the whole society's understanding of the necessity and urgency of strengthening scientific and technological innovation and accelerating the development of high-tech industries. Anhui Province should unswervingly implement the innovation driven development strategy, speed up the construction of major scientific and technological infrastructure, and establish and operate the energy, artificial intelligence and great health research institutes. We will introduce policies such as high-quality talent development strategy in the new stage, and introduce and support high-level scientific and technological talent teams. Accelerate the Jianghuai Volkswagen strategic cooperation project, and promote the investment and development of high-tech projects.

#### **References**

- [1] Ying Xiaoni. Improve the adaptability between the investment structure of high-tech industries and the internal demand of the new development pattern [J]. *Macroeconomic management*, 2021 (08): 28-35.
- [2] Nie Xiuhua. Research on the path and heterogeneity of digital finance promoting technological innovation of small and medium-sized enterprises [J]. *Western forum*, 2020, 30 (04): 37-49.
- [3] He Jianan. Research on the impact of industrial agglomeration on Regional Green total factor productivity [D]. *Dalian University of technology*, 2021.
- [4] Zhang Hongxuan, Su Shuyu. Research on the relationship between R&D investment and economic growth in Anhui Province [J]. *China business theory*, 2020 (14): 4-8.
- [5] Zhao Xiaofeng, Wei Feng. Research on measurement and influencing factors of innovation efficiency of high-tech industries in China's top ten urban agglomerations [J]. *Journal of Lanzhou University of Finance and economics*, 2021,37 (04): 32-43.
- [6] Cui Liangli. Research on technological innovation efficiency and its influencing factors of high-tech industries in the Yangtze River Delta region [D]. *Anhui University*, 2020.
- [7] Huang Haiqing, Wei Hang. Research on the impact of industrial structure upgrading of high-tech enterprises in China [J]. *Financial theory and practice*, 2022, 43 (01): 123-130.