

# Data Environment and Value Assessment of Electronic Information Manufacturing Industry in Henan Province During 1978-2013

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**Abstract**—From 1978 to 2013, the electronic information manufacturing industry in Henan Province achieved a considerable degree of development, the main business income, profits, total taxes, number of employees grew to 272.397 billion ¥, 10.5752 billion ¥, 2.05456 billion ¥, 430,677 people, an increase of 9727 times, 6824 times, 486 times and 18 times, a relatively small number of employees grows, enterprises increase revenue growth has not brought fully synchronized number of employees. Promoting the development of electronic information manufacturing industry in Henan Province, from the three aspects: First, strengthen industrial undertaking and clustering capabilities, achieve economies of scale breakthrough; the second is to improve the capability of independent innovation, to achieve dynamic breakthrough; third, the regional government focus on investment, financing guide, achieve financial break.

**Index Terms**—Electronic information manufacturing industry; Henan Province; Electronic information industry

## I. INTRODUCTION

Electronic information industry is one of the common concepts of the information industry in China. At the beginning of the last century, the electronic information industry did not take much weight in the traditional industries, [1][2][3][4]but with the development of science and technology, especially the development of information science and technology, the advanced manufacturing industry of electronic information industry developed rapidly. [5]

In this paper, statistical data situation research method (DTDA), the main steps are: first, to take data (Data), that is, from the statistical data has been collected to compare,

check and other methods, select the more accurate data; second step drawing table (Table), offices and other office software and mathematical statistical methods to draw statistical tables; third steps, the application of analytical data mapping situation map or state figure (figure); fourth steps, the chart and data technology, interpretation analysis (Analysis). The basic link of the DTDA method is: data (Data) - form (Table) - graph (figure) - Analysis (Analysis). This article will also use the variance, the standard deviation and the difference percentage and so on.

$$S_1 = \frac{\sum (x_i - \bar{x})^2}{N} \quad \text{or} \quad S_1 = \frac{\sum (x_i - \bar{x})^2}{N - 1}$$

$$S_2 = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N}} \quad \text{or} \quad S_2 = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N - 1}}$$

$$S_3 = 100 \times \frac{|(b - a)|}{(a + b) / 2}$$

In this paper, electronic-information-manufacturing industry is abbreviated as EIMI.

Henan has a long history, is an important birthplace of Chinese nation and Chinese civilization; splendid culture, outstanding people, famous celebrities, is an important birthplace of China surnames; rich in resources, is a big province of agricultural products in the main producing areas and important mineral resources; a large population, is the first of a large population, abundant labor resources, consumption the market is huge; superior location, is an important national communications hub and material distribution center; agricultural leading, is the first major agricultural province, the first major grain producing province, the first grain processing province; rapid development, the total economy ranked fifth in the country; great potential, is in the industrialization and urbanization accelerate the development stage. Continue to enhance the vitality and development potential. [6][7][8][9][10]

## II. THE DEVELOPMENT TREND OF EIMI ADDED VALUE IN HENAN

Table I.

1978-2013 Henan EIMI added value statistics

Year	Added value(Ten thousand ¥)	Growth Rate(%)	Increase value(Ten thousand ¥)	Cumulative income (Ten thousand ¥)
1978	3740.94	—	—	—
1979	3633.38	-2.88	-107.56	7374.32
1980	4270.84	17.54	637.46	11645.16
1981	6865.71	60.76	2594.87	18510.87
1982	5880.87	-14.34	-984.84	24391.74
1983	7302.82	24.18	1421.95	31694.56
1984	11498.50	57.45	4195.68	43193.06
1985	14609.27	27.05	3110.77	57802.33
1986	17350.25	18.76	2740.98	75152.58
1987	16997.10	-2.04	-353.15	92149.68
1988	26165.08	53.94	9167.98	118314.76
1989	31128.03	18.97	4962.95	149442.79
1990	32233.84	3.55	1105.81	181676.63
1991	35621.22	10.51	3387.38	217297.85
1992	57964.83	62.73	22343.61	275262.68
1993	129072.92	122.67	71108.09	404335.60
1994	160245.60	24.15	31172.68	564581.20
1995	195554.40	22.03	35308.80	760135.60
1996	191108.39	-2.27	-4446.01	951243.99
1997	217621.74	13.87	26513.35	1168865.73
1998	226243.97	3.96	8622.23	1395109.70
1999	289475.34	27.95	63231.37	1684585.04
2000	393228.41	35.84	103753.07	2077813.45
2001	434676.81	10.54	41448.40	2512490.26
2002	336073.00	-22.68	-98603.81	2848563.26
2003	306575.00	-8.78	-29498.00	3155138.26
2004	465001.00	51.68	158426.00	3620139.26
2005	486069.00	4.53	21068.00	4106208.26
2006	577493.00	18.81	91424.00	4683701.26
2007	645450.00	11.77	67957.00	5329151.26
2008	984293.00	52.50	338843.00	6313444.26
2009	1139354.00	15.75	155061.00	7452798.26
Total	7452798.26	718.51	1135613.06	—
Average	232899.95	23.18	36632.68	—

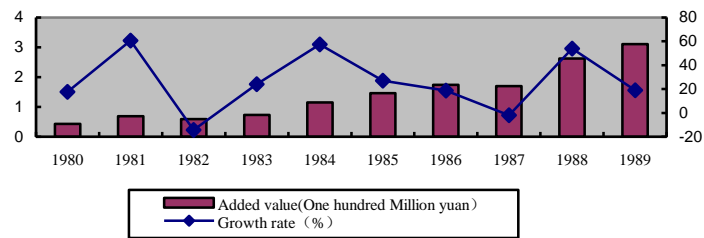


Figure 1. 1980-1989 Henan EIMI added value trend

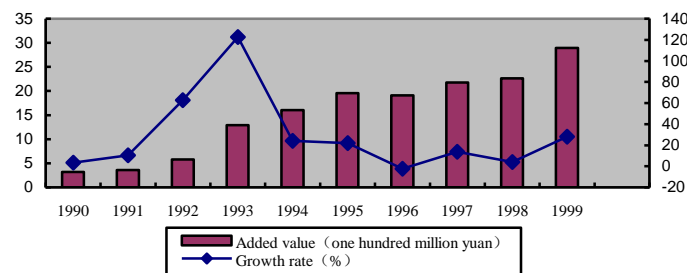


Figure 2 .1990-1999 Henan EIMI added value trend

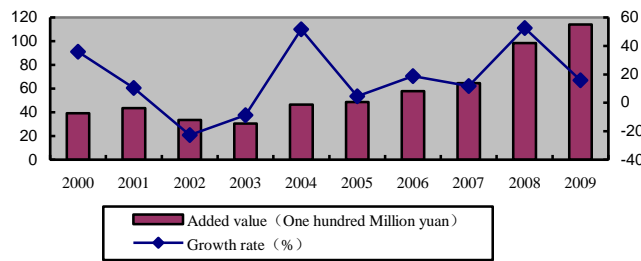


Figure 3. 2000-2009 Henan EIMI added value trend

As can be seen from the above chart, from 1978 to 2009 32 years, the total value of electronic information industry in Henan province reached ¥, breaking 70 billion, from 1978 to 2009 of \$305, 1978 is times, an increase of 304 times the average annual growth of 10 times, but there is a rise in the wave type development, 1981, 1984, 1993, 2004, 2008 is the 5 highest point. 1978 to 1999 period, the total amount of income continued to show a

sustained growth, after entering this century, the slowdown in 2000 to 2003, 2002, 2003 years or even negative growth, 2004, 2005 to achieve relatively high growth, other years since 2004 has been in a wave of steady development, there is no significant growth.

### III. THE DEVELOPMENT TREND OF EIMI MAIN BUSINESS INCOME IN HENNA

Table II.  
1978-2013 Henan EIMI Main business income statistics

Year	Income(Ten Thousand ¥)	Growth rate(%)	Cumulative income(Ten thousand ¥)
1978	2766.02	-	-
1979	14286.66	416.51	17052.68
1980	15747.67	10.23	32800.35
1981	17115.46	8.69	49915.81
1982	17448.37	1.95	67364.18
1983	23054.92	32.13	90419.10
1984	31219.54	35.41	121638.64
1985	42406.60	35.83	164045.24
1986	35076.67	-17.28	199121.91
1987	46601.41	32.86	245723.32
1988	80572.20	72.90	326295.52
1989	87827.77	9.01	414123.29
1990	90878.58	3.47	505001.87
1991	130678.98	43.80	635680.85
1992	197947.49	51.48	833628.34
1993	311591.20	57.41	1145219.54
1994	322259.74	3.42	1467479.28
1995	560796.76	74.02	2028276.04
1996	539122.13	-3.86	2567398.17
1997	604956.23	12.21	3172354.40
1998	73860.14	-87.79	3246214.54
1999	882120.00	1094.31	4128334.54
2000	1151015.95	30.48	5279350.49
2001	1083876.13	-5.83	6363226.62
2002	1252980.90	15.60	7616207.52
2003	1423562.00	13.61	9039769.52
2004	1684787.00	18.35	10724556.52
2005	1698792.00	0.83	12423348.52
2006	2092365.00	23.17	14515713.52
2007	2412442.00	15.30	16928155.52
2008	3511041.00	45.54	20439196.52
2009	3941295.00	12.25	24380491.52
2010	4943307.00	25.42	29323798.52
2011	11317206.00	128.94	40641004.52
2012	20090762.00	77.52	60731766.52

2013	27239658.00	35.58	87971424.52
Total	87971424.52	222.95	-
Average	2443650.68	-97.22	-

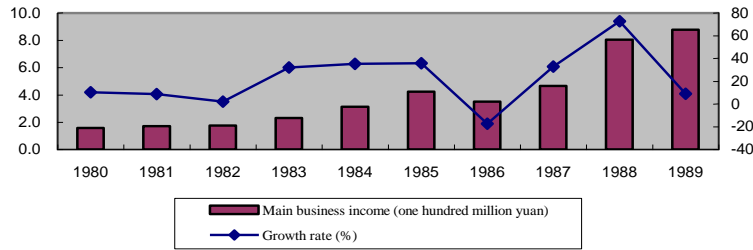


Figure 4. 1980-1989 Henan EIMI Main business income trend

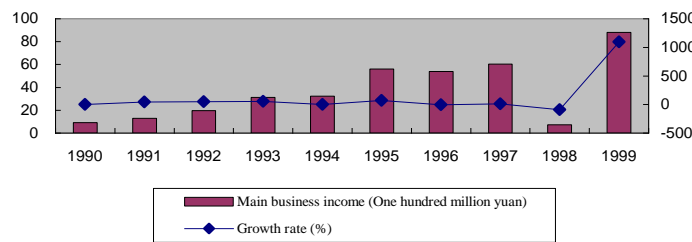


Figure 5. 1990-1999 Henan EIMI Main business income trend

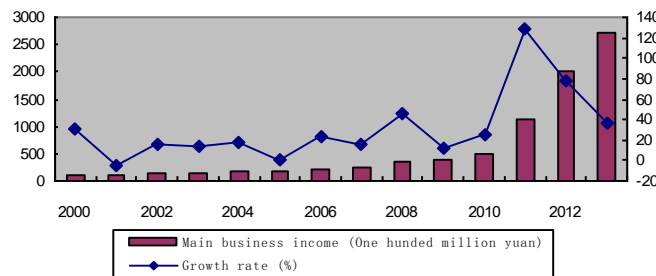


Figure 6. 2000-2013 Henan EIMI Main business income trend

As can be seen from the above chart, from 1978 to 2013 36 years, Henan Province, the electronic information industry manufacturing main business revenue totaled 879.714 billion ¥, about to break through 880 billion ¥, 028 million ¥ from 1978 to 2013 growth years of 272.397 billion ¥, 2013 1978 9728 times, an increase of 9727 times the average 278 times per year to maintain the growth, but the growth rate in different years is not the same, basically showing that the wave of

development. Where in 1988, 1999, 2011 is three highest points. From 1978 to 1999, total revenue continued to show growth in totality, into the present century, from 2000 to 2009, basically showing waves and stable development, to 2011 reached a peak growth from 2012 onwards and the emergence of a more significant decline.

#### IV. THE DEVELOPMENT TREND OF EIMI PROFIT INCOME IN HENNA

Table III.  
1978-2013 Henan EIMI profit income statistics

year	Profit(Ten Thousand ¥)	Growth Rate(%)	Cumulative Profit income(Ten Thousand¥)
1978	154.94	-	-
1979	149.51	-3.50458	304.45
1980	302.91	102.6018	607.36
1981	1564.49	416.4867	2171.85
1982	-120.95	-107.731	2050.9
1983	1537.53	1371.21	3588.43
1984	3597.03	133.9486	7185.46
1985	4538.40	26.17076	11723.86
1986	1839.0	-59.4791	13562.86

1987	1911.34	3.93366	15474.2
1988	4809.73	151.6418	20283.93
1989	3926.12	-18.3713	24210.05
1990	4176.01	6.364808	28386.06
1991	-593.00	-114.2	27793.06
1992	2952.55	597.901	30745.61
1993	13598.55	360.5697	44344.16
1994	36213.20	166.3019	80557.36
1995	67152.46	85.43642	147709.8
1996	35636.78	-46.9315	183346.6
1997	18055.53	-49.3346	201402.1
1998	19841.71	9.892703	221243.8
1999	53151.83	167.8793	274395.7
2000	132374.65	149.05	406770.3
2001	51556.05	-61.0529	458326.4
2002	58325.4	13.13008	516651.8
2003	87526.0	50.06498	604177.8
2004	131658.0	50.42159	735835.8
2005	87245.0	-33.7336	823080.8
2006	108442.0	24.29595	931522.8
2007	191517.0	76.60777	1123040
2008	392039	104.7019	1515079
2009	257261	-34.3787	1772340
2010	449642	74.78048	2221982
2011	689227	53.2835	2911209
2012	585613	-15.0334	3496822
2013	1057520	80.58342	4554342
Total	4554342	-204.715	-
Average	126509.5	-5.84899	-

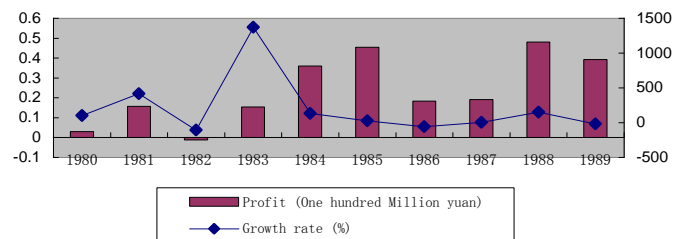


Figure 7. 1980-1989 Henan EIMI profit income trend

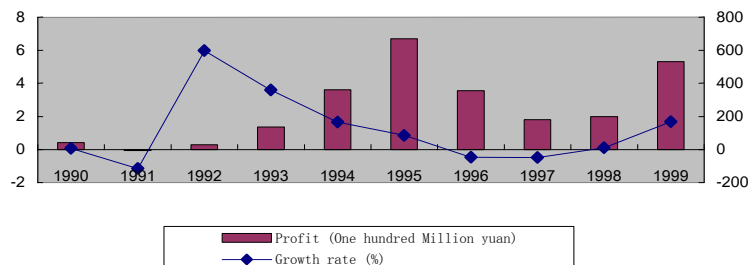


Figure 8. 1990-1999 Henan EIMI profit income trend

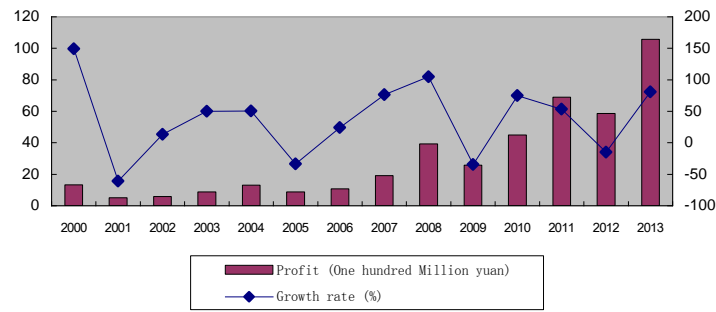


Figure 9. 2000-2013 Henan EIMI profit income trend

As can be seen from the above chart, from 1978 to 2013 36 years, Henan Province, the electronic information industry manufacturing profit revenue totaled 45.54 billion ¥, breaking 45 billion, from 1978 to 2013 of 1.5494 million ¥ of 10,575,200,000 ¥, 2013 1978 6825 times, an increase of 6824 times the average per year to

maintain a 195-fold increase, but the difference between gains and downs, in 1981, 1984, 1988, 1993, 1999, 2000, 2008 , 2010, 2013 are 9 high.

V. THE DEVELOPMENT TREND OF EIMI EXPENSES OF TAXATION IN HENNA

Table IV. 1978-2013 Henan EIMI expenses of taxation statistics

year	Total tax(hundred Million ¥)	Growth Rate(%)	Cumulative tax(Hundred million ¥)
1978	422.80	-	-
1979	430.40	1.80	853.2
1980	392.16	-8.88	1245.36
1981	506.92	29.26	1752.28
1982	774.74	52.83	2527.02
1983	902.04	16.43	3429.06
1984	1092.56	21.12	4521.62
1985	1925.61	76.25	6447.23
1986	5792.8	200.83	12240.03
1987	6405.2	10.57	18645.23
1988	9000.7	40.52	27645.93
1989	13366.2	48.50	41012.13
1990	14018.7	4.88	55030.83
1991	5594.9	-60.09	60625.73
1992	8844.3	58.08	69470.03
1993	15923.9	80.05	85393.93
1994	29188.8	83.30	114582.73
1995	39351.2	34.82	153933.93
1996	24612.6	-37.45	178546.53
1997	33222.4	34.98	211768.93
1998	32356.8	-2.61	244125.73
1999	41439.5	28.07	285565.23
2000	52118.7	25.77	337683.93
2001	36748.8	-29.49	374432.73
2002	37119.2	1.01	411551.93
2003	48754	31.34	460305.93
2004	53469	9.67	513774.93
2005	53254	-0.40	567028.93
2006	61988	16.40	629016.93
2007	90264	45.62	719280.93
2008	128839	42.74	848119.93
2009	100978	-21.62	949097.93
2010	107800	6.76	1056897.93
2011	172323	59.85	1229220.93
2012	205456	19.23	1434676.93

2013	223252	8.66	1657928.93
Total	1657929	928.79	-
Average	46053.58	26.54	-

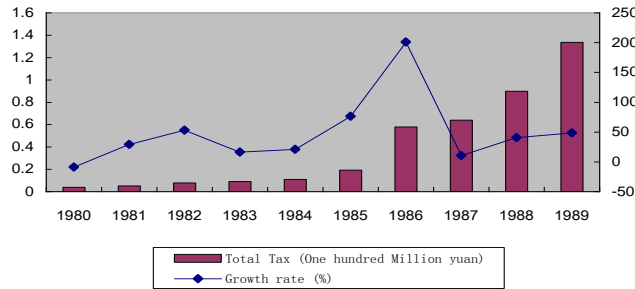


Figure 10. 1980-1989 Henan EIMI expenses of taxation trend

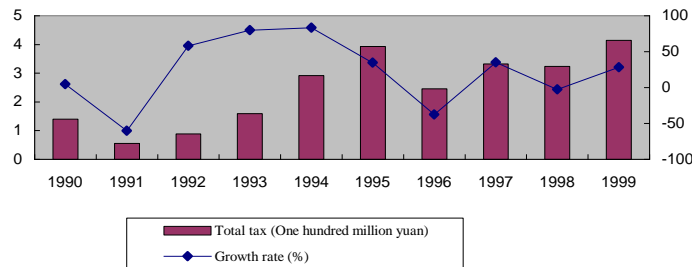


Figure 11. 1990-1999 Henan EIMI expenses of taxation trend

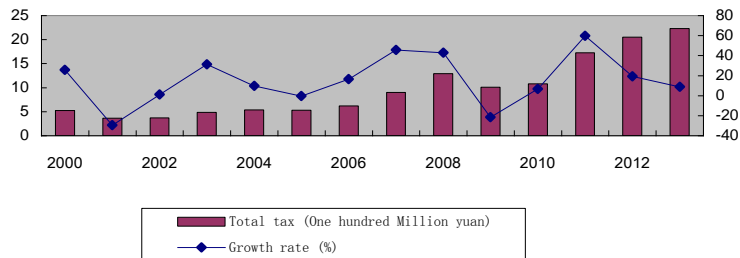


Figure 12. 2000-2013 Henan EIMI expenses of taxation trend

As can be seen from the above chart, from 1978 to 2013 for 36 years, the total amount of electronic information manufacturing industry totaled 16.58 billion ¥ in Henan taxes, an increase of 4.228 million ¥ from 1978 to 2013 of 22.3252 million ¥, 2013 528 times in 1978, maintained an average annual growth of nearly 15 times, an average of 460 million ¥ turned over to state taxes each year. The main business income compared to

the same period, the total amount of taxes and did not fully develop synchronized, tax development model is unstable, a considerable number of years, or more volatile, which is the highest growth in 1986, growth rate of 201% .

VI. THE DEVELOPMENT TREND OF EIMI NUMBER OF EMPLOYEES IN HENNA

Table V.  
1978-2013 Henan EIMI number of employees statistics

Year	Number of employees(people)	Growth rate(%)	Cumulative number of Employees(people)
1977	24475	-	-
1978	25350	3.58	49825
1979	24851	-1.97	74676
1980	26836	7.99	101512
1981	31880	18.80	133392
1982	31212	-2.10	164604
1983	31771	1.79	196375
1984	31617	-0.48	227992
1985	32848	3.89	260840
1986	33669	2.50	294509

1987	34210	1.61	328719
1988	34394	0.54	363113
1989	43994	27.91	407107
1990	48038	9.19	455145
1991	58368	21.50	513513
1992	61208	4.87	574721
1993	66083	7.96	640804
1994	70702	6.99	711506
1995	66647	-5.74	778153
1996	67006	0.54	845159
1997	78073	16.52	923232
1998	73525	-5.83	996757
1999	72416	-1.51	1069173
2000	85075	17.48	1154248
2001	87007	2.27	1241255
2002	54072	-37.85	1295327
2003	44488	-17.72	1339815
2004	44797	0.69	1384612
2005	48995	9.37	1433607
2006	48069	-1.89	1481676
2007	53063	10.39	1534739
2008	60469	13.96	1595208
2009	67000	10.80	1662208
2010	92198	37.61	1754406
2011	251952	173.27	2006358
2012	430677	70.94	2437035
Total	2437035	407.87	-
Average	67695.42	11.65	-

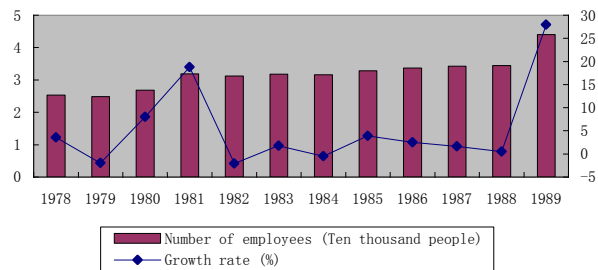


Figure 13. 1978-1989 Henan EIMI number of employees trend

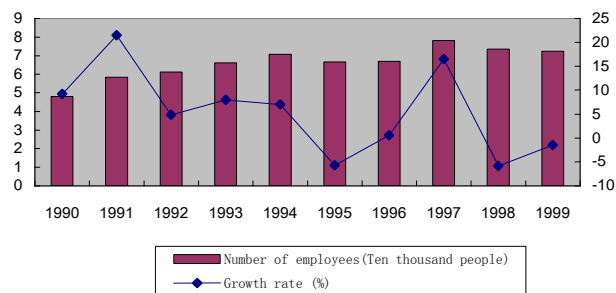


Figure 14. 1990-1999 Henan EIMI number of employees trend





Figure 15. 2000-2012 Henan EIMI number of employees trend

As can be seen from the above chart, from 1978 to 2012 35 years, the number of practitioners in Henan Province electronic information manufacturing industry, compared to the main business income, profits, taxes volatility, although in 1982, 1984, 1995, 1998, 1999, 2002, 2003, 2006, and several years of negative growth, but overall still maintained a rising momentum of development. 23350 people from 1978 to 2012 growth of 430,677 people, showing W type. The main business revenue, profits, substantial increase taxes, while the

number of relatively stable development, indicating that the electronic information industry in Henan manufacturing labor productivity increased significantly.

### VII. TREND COMPARISON OF EIMI GROWTH RATE

#### A. The comparison between the added value and the income

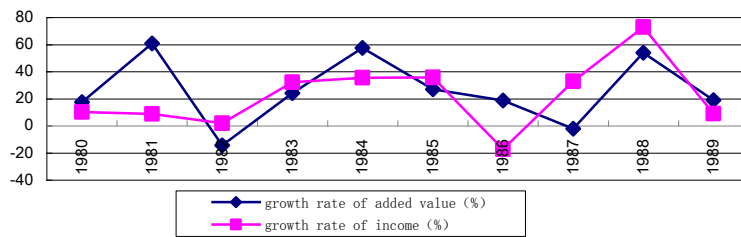


Figure 16. 1980-1989 Henan EIMI the comparison between the added value and the income

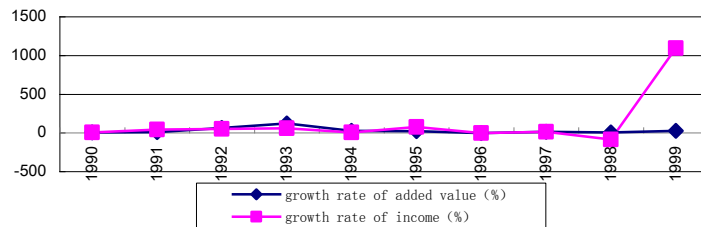


Figure 17. 1990-1999 Henan EIMI the comparison between the added value and the income

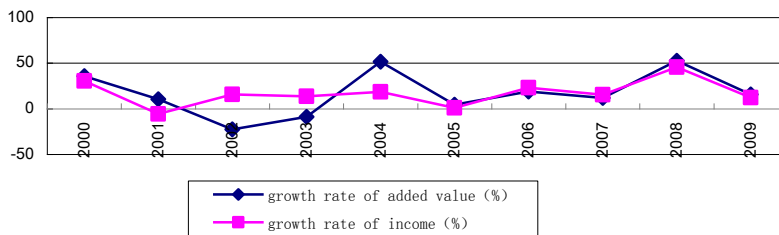


Figure 18. 2000-2009 Henan EIMI the comparison between the added value and the income

As can be seen from the above chart, 1980--2009 years 30 years Henan Information Industry manufacturing industrial added value and revenue trends except for a few years as 1986,1999,2002,2004, generally followed the same trend, with changes in the magnitude of the difference other indicators are also relatively small

compared, indicating correlation Henan information Industry manufacturing value added and income is relatively high.

#### B. The comparison between the income and the profit

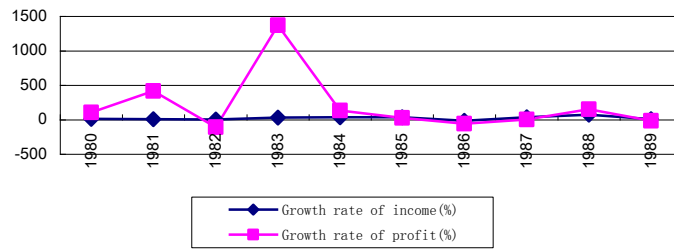


Figure 19. 1980-1989 Henan EIMI the comparison between the income and the profit

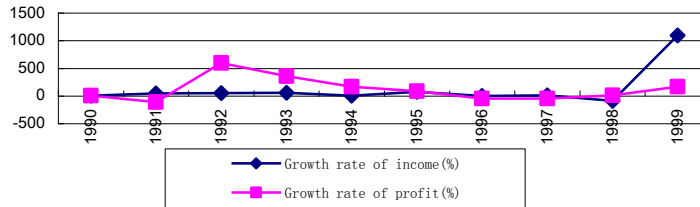


Figure 20. 1990-1999 Henan EIMI the comparison between the income and the profit

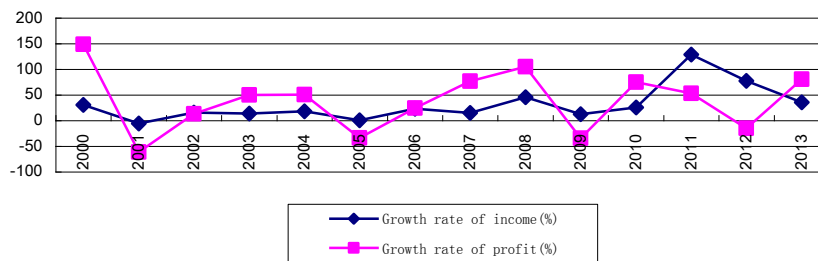


Figure 21. 2000-2013 Henan EIMI the comparison between the income and the profit

As can be seen from the above chart, From 1978 to 2013 36 years, the electronic information industry manufacturing main business revenue and profit growth in Henan significant difference, the difference is higher than the income of the profit difference, the main business income in the 20th century 90 years down the amplitude fluctuations rise, while profit income rose in

the 1980s down by a big margin, the difference between revenue and profit visibility is also very significant correlation between profits and income is not high.

*C. The comparison between the income and the expenses of taxation*

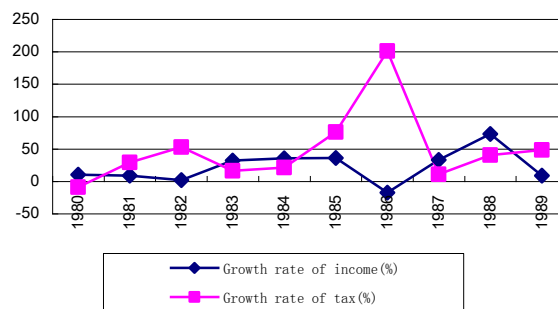


Figure 22. 1980-1989 Henan EIMI the comparison between the income and the expenses of taxation



Figure 23. 1990-1999 Henan EIMI the comparison between the income and the expenses of taxation

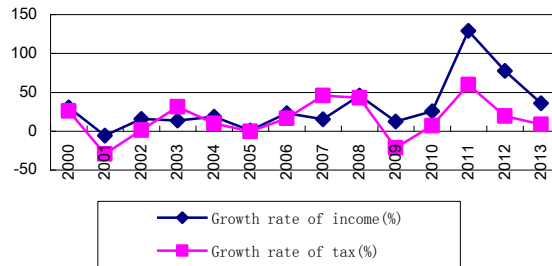


Figure 24. 2000-2013 Henan EIMI the comparison between the income and the expenses of taxation

As can be seen from the above chart, From 1978 to 2013 36 years, large differences in Henan Information Industry and manufacturing income taxes grew Overall, 1980--1989 years, the magnitude of change is higher than the income tax, 1990--2013 annual revenue growth rate higher than the tax, indicating the Henan provincial government in the 1990s after the focus on the use of tax

leverage to regulate the economy, the creation and expansion of space for the information industry, manufacturing industry revenue growth.

*D. The comparison between the income and the number of employees*

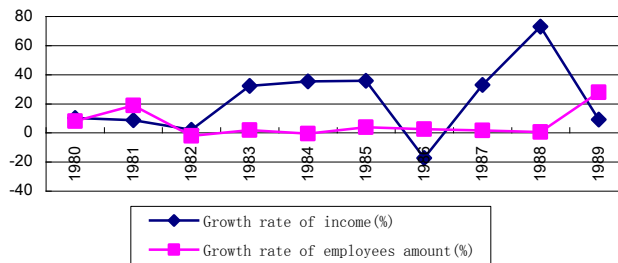


Figure 25. 1980-1989 Henan EIMI the comparison between the income and the number of employees

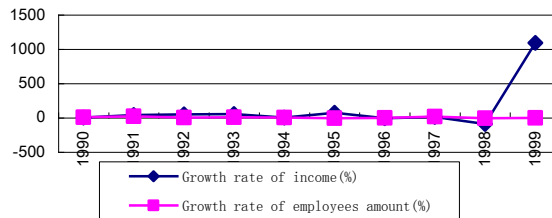


Figure 26. 1990-1999 Henan EIMI the comparison between the income and the number of employees

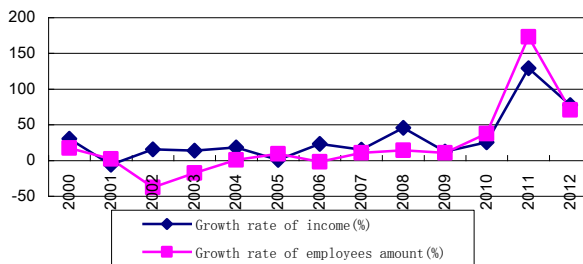


Figure 27. 2000-2012 Henan EIMI the comparison between the income and the number of employees

As can be seen from the above chart, the period from 1978 to 2012 for 35 years, the electronic information industry manufacturing main business revenue growth differences and differences in the number of employees grew in Henan Province has a certain similarity, that is accompanied by revenue growth, number of employees also along with growth, especially since the 1990s is obvious.

## VIII. CONCLUSIONS

### A. Strengthen industrial undertaking and clustering capabilities, achieve economies of scale breakthrough

An industry cluster level, directly determine whether it can produce better economies of scale. In terms of other electronic information industry is more mature southeast coastal areas, or from the practice of recent years, Henan Province, the information industry manufacturing point of view, the ability to continue to strengthen industry clusters, achieve economies of scale are a breakthrough in Henan Province to further promote the development of electronic information manufacturing industry the only way. Today's society, economic growth is slowing down, China's electronic information industry in the southeast coastal areas are basically saturated, it is difficult to achieve leapfrog development. The development of electronic information industry manufacturing quality industrial structure and cluster level raised higher requirements. Electronic information industry base is weak manufacturing Henan Province, a small industrial scale, it is difficult to achieve a breakthrough in the fierce competition. Therefore, Henan ability to continue to strengthen industry clusters, in-depth cooperation with Alibaba, Foxconn, and other large enterprises, to undertake a number of leading projects, give full play to its leading role on the industry, and constantly improve the industrial chain, to achieve value chain development in a cluster and expand the scale of better implementation.

### B. Improve the capability of independent innovation, to achieve dynamic breakthrough

Henan Province, though populous, the large number of labor force, however, is not education in Henan province, labor quality is not high. Especially the lack of mastery of advanced technology and cutting-edge information industry manufacturing high-end talent. The talent, achieve scientific and technological innovation is the driving force. The ability of independent innovation, is to determine the long drive power Henan Information Industry manufacturing industry. Therefore, the information industry in Henan Province to achieve a breakthrough in the manufacturing sector, including power on, we must improve the capability of independent innovation, and to improve the capability of independent innovation, we must face the reality of the province, the introduction of information in areas such as industrial manufacturing and other academic leaders senior personnel. You can relax on such talent age, retirement

conditions, and to propose some preferential policies in terms of housing, spouse placement, to absorb these people were added to the information industry manufacturing Henan up. And increase the extent of its reward innovation, and to further address the lack of its own brand and core competitiveness of information industry, the plight of the manufacturing sector in Henan Province, to achieve its breakthrough in terms of power.

### C. The regional government focus on investment, financing guide, achieve financial break.

Henan Province, the information industry manufacturing base is weak, the relevant industrial supporting system is not perfect, it does not have the advantage of attracting investment. The investment is stimulating industrial development is a major motivation factor. Rely solely on the market, it is difficult to take advantage of Henan Province in the fierce competition. Manufacturing and information industry is to achieve double the growth of the economy a major industry, the state also has a policy related to the information industry manufacturing from the southeast coast to the Midwest inclined, therefore, Henan Province to seize the opportunity to accelerate development, Henan levels Government must be combined with local reality, introduced a number of preferential policies to attract foreign investment, such as giving the appropriate level of tax concessions. In respect of financing, but also focus on the establishment and improvement of electronic information industry financing guarantee mechanisms to encourage the implementation of appropriate policies for those financial institutions to provide loans to support electronic information enterprises, and continue to guide the industry risk widening investment channels, so as to provide funding to support its long-term development.

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