Stock Investment Value Analysis Model About Carbon Neutrality Based on Analytic Hierarchy Process

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Abstract—In the first half of 2021, The Chinese government frequently issued new policies to crack down on large companies in various industries, leading to volatility in the stock market. This article qualitatively analyzes the current Chinese policies through the concept of deep learning algorithm and quantitatively analyzes the data of each stock by using analytic hierarchy process. By extracting information from the judgment matrix, AHP provides a framework for investors to analyze various investment factors, evaluate stock investment options and make final investment choices. The main principle of this method is to match decision-makers' preferences with stock characteristics. The model requires presenting a number of potential options and then evaluating and comparing alternatives against a variety of factors. It allows investors to take personal preferences and judgment into account in the process of solving problems. Through analysis and calculation, this article gives 10 stocks suitable for investment in Chinese stock market at this stage.

Keywords: Carbon neutrality, Analytic hierarchy process, Stock investment decision, Judgment Matrix.

1 INTRODUCTION:

On July 7, 2021, GuangDong Development Bank applied for freezing 132 million yuan of funds of Evergrande Real Estate. [1] Meanwhile, on July 24, 2021, the General Office of the CPC Central Committee and The General Office of the State Council issued “Opinions on Further Reducing the Homework Burden and Off-campus Training Burden of Students in Compulsory Education”, which announced the complete demise of the off-campus subject training market of nearly 400 billion YUAN. On the same day, Tencent Music was punished and its stock price fell nearly 35% from its peak in the past six months [2]; Stock of Maotai has already declined nearly 32 percent from its peak in February. The State Administration for Market Regulation has concentrated punishment on the Internet sector: Meituan, Alibaba, Tencent and other companies have been punished.

As a result of the policy change, many investors suffered economic losses in the stock market. Real estate, K12 education, the Internet, liquor, these were once bullish sectors, now have varying degrees of market value decline. Next, based on the combination of the concept of deep learning

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algorithm and current Chinese government policies, fully understand the market situation and government orientation, plus the weight consideration of hierarchical analysis, this paper gives a reasonable stock investment advice to current investors.

2 THE QUANTITATIVE AND QUALITATIVE ANALYSIS OF CHINESE STOCK MARKET

The Chinese government clamped down and restricted large companies in various industries. It can be explained by the concept of local optimum to global optimum in deep learning algorithm which is shown in the figure 1[3]. Since the reform and opening up policy, China has been working hard on local optimization, which means that some people can first become rich and feed China's huge population. In contrast, global optimality can be understood as common prosperity, so that most people do better. According to the pareto optimality model in economics [4], as shown in the figure 2, the horizontal axis represents the public benefits and the vertical axis represents the rich profits. At present, China's position is blue dot, red dot and yellow dot can achieve GDP growth, but if the red dot continues to develop, the public income cannot increase, so GDP growth is only an illusory increase of the average, and the gap between the rich and the poor will get worse. The yellow dot can greatly increase the general income, and also can sustain GDP growth. Therefore, China is looking for the path from local optimization to global optimization, that is, how to get from blue point to yellow point. In this process, the Chinese government has a tendency to crack down on monopolistic companies in various fields, and intends to promote market competition. As a result, stocks in mature sectors that were once favored won't be a high-yielding choice.

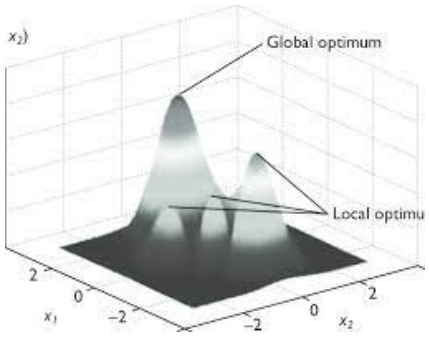


FIGURE 1 LOCAL OPTIMUM AND GLOBAL OPTIMUM [3]

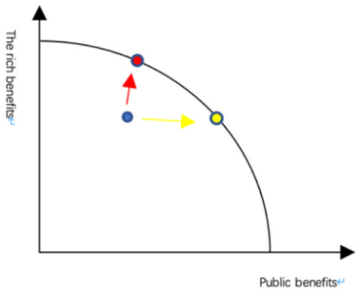


FIGURE 2 PARETO OPTIMALITY MODEL[4]

Which sectors are developing vigorously on China's global optimal path? With the advent of the global low-carbon transition dividend, China is transforming from a major importer of petrochemical to a major exporter of new energy. Chapter 11, Chapter 37, Chapter 38 and Chapter 39 of China's 14th Five-year Plan in 2021 all mention the issues of green economy and carbon neutrality [5]. Yi Gang, governor of the People's Bank of China, said at the China Development Forum in March that China would invest more than 100 trillion CNY in carbon neutrality in the future [6]. According to WRI's article "Turning Points: Trends in Countries' reaching peak greenhouse Gas Emission [7], many developed countries in Europe - France, The United Kingdom, Denmark, Germany, etc. - have already reached carbon peak, which makes the carbon tax in developed countries higher in the future. After that, there is less market for high-carbon products from developing countries. At the same time, the paper proposed that China is expected to reach carbon peak in 2030. At this stage, China's top priority is to develop carbon neutrality. Driven by carbon trading and carbon taxes, many industries will face unprecedented transformation. Generally, the concept of carbon neutrality can be divided into three categories as shown in the figure 3, which will be explained one by one in the following paragraphs[8].

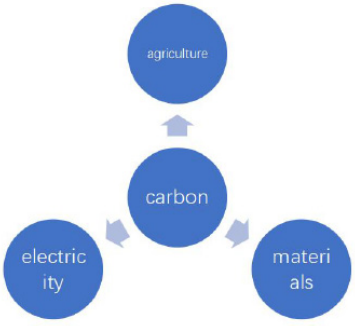


FIGURE 3 CARBON NEUTRAL CLASSIFICATION [8]

Starting from the agricultural sector, Hillhouse Capital listed five new ways promoted by agricultural decarbonization in the report, namely, plant protein, precision agriculture, gene

editing, aquaculture and vertical agriculture. In the field of plant protein, some plants produce less carbon pollution from protein, such as peas and nuts which are shown in the figure 4 [9]. Precision agriculture refers to the use of drones, sensors, satellite data and automation technologies to improve the efficiency of fertilizer and pesticide use. Gene editing, as the name suggests, involves modifying seed genes to improve grain productivity per unit of carbon emissions; The great development of aquaculture is due to the fact that the carbon density of seafood production and aquaculture is much lower than that of beef and mutton [9]. Vertical farming is the vertical production of vegetables and fruits indoors by controlled lighting and temperature.

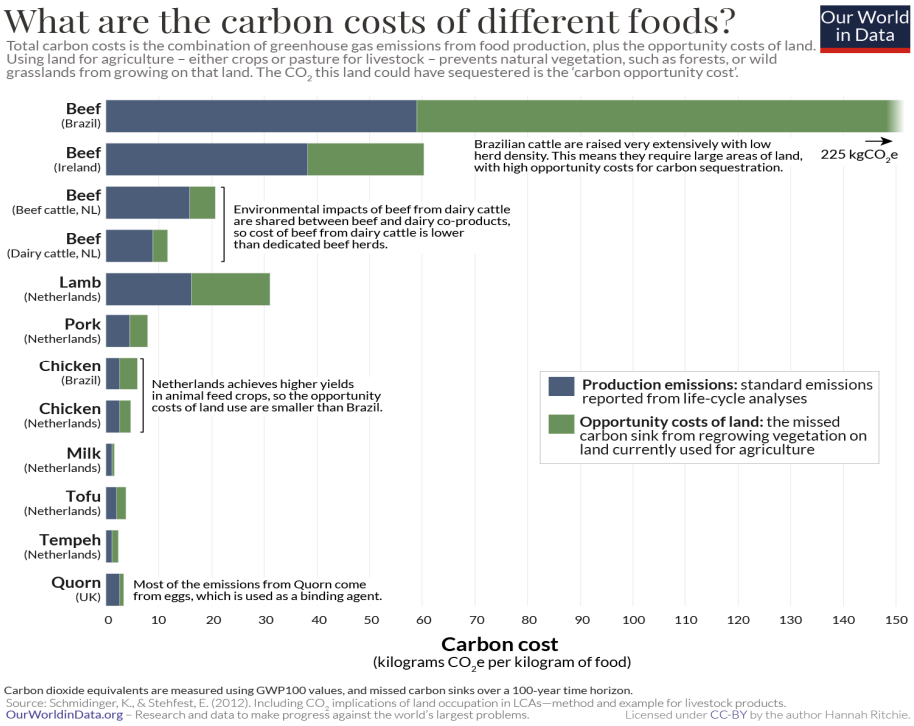
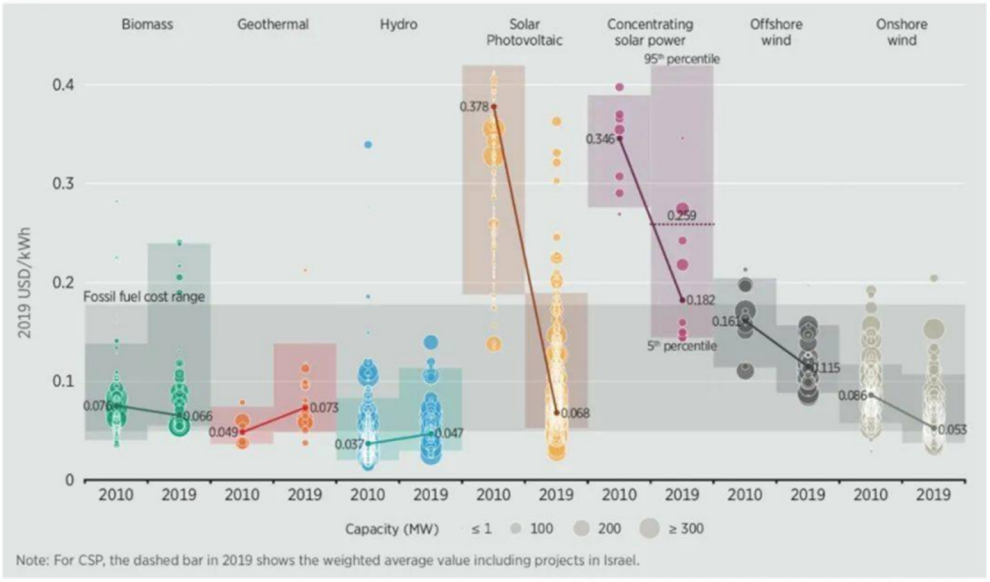


FIGURE 4 WHAT ARE THE CARBON COSTS OF DIFFERENT FOODS? [9]

Electricity reform has the highest proportion in carbon neutral sector. According to the IEA, global electricity consumption will increase 2.5 times by 2050. Therefore, how to provide a new way to replace the original coal power generation has become a top priority. The focus of low-carbon electricity generation includes photovoltaic and wind power. The IEA predicts that photovoltaic and wind power could account for 24 percent of the world's electricity generation by 2040, up from 7 percent now, making it a significant new source of energy. Among them, photovoltaic power generation has the best future development prospect. As the price has been falling, figure 5 shows the global cost of large-scale photovoltaic power generation has been as low as 0.068 USD/KWH by 2019 [9]. And new photovoltaic materials - such as perovskite - may

make them even cheaper. On the other hand, the reform of electricity will bring about the change of transportation mode. Major electronics manufacturers have announced the manufacturing of electric vehicles in recent years. One important reason is that the production cost of lithium batteries is constantly falling. According to Wright's Law, the battery cost will decrease by 28% for every doubling of electric vehicle production. Therefore, in the future, the average price of electric vehicles will continue to approach the average price of diesel vehicles, and eventually lower than the average price of diesel vehicles. Cathie Wood, founder of ARK, said in a live call with Li Yimei, managing director of China Amc, in March 2021 that compound annual growth rate of electric vehicles could be as high as 82% by 2025. Therefore, new energy vehicles can be described as one of the fields with great development prospects. In the indicator level of the analytic hierarchy process, this essay will divide the electric power sector into three small fields: wind and photovoltaic power and new energy vehicles.



Source: IRENA Renewable Cost Database.

FIGURE 5 GLOBAL LCOES FROM NEWLY COMMISSIONED UTILITY-SCALE RENEWABLE POWER GENERATION TECHNOLOGIES 2010-2019[9]

Finally, there is a detailed analysis of the material plate. First, the entire downstream petrochemical

industry may be affected, for example: the main material of plastics is polyethylene terephthalate, which has high carbon emissions in the production process, and may be replaced by new materials - polylactic acid or PBAT. Secondly, the raw materials of the garment industry will also be changed. For example, polyamide will gradually be replaced by bio-based polymer materials. Finally, the construction industry could also be disrupted: steel and cement, for example, have very high carbon emissions, which may be replaced by glass or rock wool. Therefore, the

indicator level in the analytic hierarchy process

will select the stock data of companies producing new materials in the petrochemical, clothing and construction industries.

Through the interpretation of China's current policies and the analysis of carbon neutrality, this paper selects five leading stocks in the above sectors, analyzes the 40 stocks through the analytic hierarchy process, and gives the final weight, so as to give investors a reasonable suggestion on how to select stocks in the carbon neutrality sector under the existing capital. (The following analysis data is from the latest annual report of each company - June 30, 2021 - source of Oriental Fortune Software)

2.1 Establishing an index system for stock investment valuation

The purpose of investors' stock investment is to get as much investment return as possible in the long term in the future, so this article does not consider the speculation in the stock market, both short-term operation of stock buying and selling. This article only considers three level factors of stock value from the perspective of investment value, which are respectively profitability, growth and risk. Among them, profitability can be judged from the five indicators, which are earnings per share, net asset per share, reserve fund per share, dividend form and return on equality; Growth can be judged from the increase rate of business revenue, net profit growth rate, growth rate of ROE and operating cash flow per share; Risk is judged by three measures: equity ratio, undistributed profit per share, and price-earnings ratio.

2.2 Step analysis of stock investment valuation based on analytic Hierarchy Process

Establishment of hierarchical structure model: This paper establishes the hierarchical structure model of stock investment value evaluation by using the basic principle of analytic hierarchy process:

Constructing judgment matrix: This paper adopts the expert investigation method and the relative comparison method proposed by T.L.Saaty to compare factors in pairs and adopt the relative scale, so as to reduce the difficulty of comparing factors with different properties as much as possible and improve the accuracy. The meaning of T.L. Saaty scale is shown as table 1:

TABLE 1. VERBAL JUDGEMENT [11]

Scale	Verbal Judgement of preferences
aij = 1, aji = 1	Equally preferred
aij = 3, aji = 1/3	Moderately preferred
aij = 5, aji = 1/5	Strongly preferred
aij = 7, aji = 1/7	Very strongly preferred
aij = 9, aji = 1/9	Extremely preferred
aij =2,4,6,8	Mean-Value of two near situations above

The element aij of the comparison matrix represents the comparison result of the ith factor with the jth factor.

- $aij = \frac{1}{aji},\ aii = 1\ (i, j = 1,\ldots, n)$
- A^T is also a uniform matrix.
- If the rows of A are proportional, the rank of matrix transformation of A is 1.
- The maximum eigenvalue of A is $\lambda = n$, and the other n-1 eigenvalues are 0.
- Any column (row) of A is an eigenvector corresponding to the eigenvalue n, $A\omega = n\omega$.
- According to experts' suggestions, the comparison matrix can be obtained as shown in the table 2:

TABLE 2. JUDGEMENT MATRIX AT CRITERIA LEVEL RELATIVE TO THE OBJECT AND INDICATOR LEVEL RELATIVE TO CRITERIA LEVEL

A	B1	B2	B3
B1	1	3	2
B2	1/3	1	1/2
B3	1/2	2	1

B1	C11	C12	C13	C14	C15
C11	1	3	2	4	1
C12	1/3	1	1/2	1	1/2
C13	1/2	2	1	2	2
C14	1/4	1	1/2	1	1/4
C15	1	1/2	1/2	4	1

B2	C21	C22	C23	C24
C21	1	1/2	2	1/2
C22	2	1	4	1
C23	1/2	1/4	1	1/3
C24	2	1	3	1

B3	C31	C32	C33
C31	1	1/2	1/3
C32	2	1	1/3
C33	3	3	1

Calculate weights and test the consistency of the judgement matrix

If the pairwise comparison matrix is a uniform matrix, the normalized eigenvector of the corresponding maximum eigenvalue is taken $\{\omega 1, \omega 2, \ldots, \omega n\}$, and $\sum_{i=1}^{n} \omega i = 1$, ωi represents the weight of the influence degree of the ith factor on a factor at the upper level.

If the paired comparison matrix is not a uniform matrix, T.L.Saaty suggests using the normalized

eigenvector of the largest eigenvalue, so $A\omega = n\omega,\ \omega = \{\omega 1, \omega 2, \ldots, \omega n\}$.

Define consistency indicators:

$$C.I. = \frac{\lambda max - n}{(n-1)} \text{ and } C.R. = \frac{C.I.}{R.I.}$$

2.3 I. is random index; C.R. is random consistency; R.I. is average random consistency index.

TABLE 3 RANDOM INDEX [9]

Random Index (RI)															
n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.58

When $C.R. < 0.1$, the degree of inconsistency of the comparison matrix is within the allowable range, and there is satisfactory consistency. Through the consistency test, the

normalized eigenvector of the comparison matrix can be used as the weight vector, otherwise, the paired comparison matrix should be reconstructed which can be seen in the table 3 .

Using MATLAB, each value can be calculated and the consistency test is as follows (Table 4 and Table 5):

TABLE4 WEIGHTS BETWEEN OBJECTIVE LEVEL AND CRITERIA LEVEL

Objective level	Criteria level	Criteria level weights	λ in criteria level	C.I.in criteria level	R.I. in criteria level	C.R.in criteria level	Consistency test
A	B1	0.5396	3.0092	0.0046	0.58	0.0079	pass
	B2	0.1634					
	B3	0.2970					

TABLE 5 WEIGHTS BETWEEN CRITERIA LEVEL AND INDICATOR LEVEL

Criteria level	Indicator level	Indicator level weights	λ in indicator level	C.I. in indicator level	R.I. in indicator level	C.R. in Indicator level	Consistency test	Final weights
B1	C11	0.3413	5.0706	0.0177	1.12	0.0158	pass	0.1842
	C12	0.1069						0.0577
	C13	0.2451						0.1323
	C14	0.0906						0.0489
	C15	0.2161						0.1166
B2	C21	0.1850	4.0104	0.0035	0.90	0.0039	pass	0.0302

	C22	0.3701						0.0605
	C23	0.0997						0.0163
	C24	0.3452						0.0564
B3	C31	0.1571	3.0536	0.0268	0.58	0.0462	pass	0.0467
	C32	0.2493						0.0740
	C33	0.5936						0.1763

Check the consistency in final weights:
C.I. in final weights = (C.I. in indicator level) *$(\text{criterialevelweights})^{T}$=0.018082
C.R. in final weights = (C.R. in indicator level) + (C.I. in final weights / R.I. in final weights) = 0.0079+(0.018082/1.48) = 0.0201 < 0.1, which passes the consistency test.
In order to improve the reliability of valuation, this paper assumes that there is no big difference in investment preference among different investors. The names and codes of the 40 stocks selected are as follows: Plant Protein (Shuangta Food 002481, Zuming Stock 003030, XueRong Biological 300511, Lotus Health 600186, AnQi Yeast 600298); Gene editing (Dabeinong 002385, Xin 'an 600596, Longping High-tech 000998, Denghai Technology 002041, Bahui 002170); Precision Agriculture (QuanYing Hi-tech 300087, ShenNongZhongYe 300189, XinYanGuFen 300159, Jinzhengda 002470, Sierte 002538); Aquaculture (KaiChuangGuoJi 600097, DaHuGuFen 600257, Jiawo Food 300268, BaiyangGuFen 002696, Zhongshui Fishery 000798); Photovoltaic power generation (TianHeGuangNeng 688599, DongfangRisheng 300118, Huazi Technology 300490, Dike GuFen 300842, YaoXinGuFen 002256); Wind power generation (TeBian Electric 600089, Tianshun Wind Power 002531, Goldwind Technology 002202, Taisheng Wind Power 300129, Jiangte Motor 002176); New energy vehicles (Ningde Times 300750, BYD 002594, Yiwei Li-Neng 300014, Tonghe Technology 300491, Guoxuan High-tech 002074); Materials industry (Jinfa technology 600143, Jindan Technology 300829, RuifengGaoCai 300243, Wanhua Chemical 600309, KeLiYuan 600478). The following is the original data :(source: Oriental fortune software)

The following table shows the original data of 40 stocks:

TABLE 6 ACTUAL VALUE OF INDICATOR

Index / Stock Code	C11 (CNY)	C12 (CNY)	C13 (CNY)	C14 (%)	C21 (%)	C22 (%)	C23 (%)	C24 (CNY)	C31 (%)	C32 (CNY)	C33 (%)
002481	0.1797	0.3869	2.2604	8.00	18.78	30.49	12.77	0.0992	67.39	1.0195	28.58
003030	0.2500	4.2231	7.9500	3.15	11.92	-36.44	13.50	0.2912	64.98	2.5004	30.00
300511	-0.1600	1.0842	4.1781	-3.55	17.27	-145.48	13.10	0.1172	44.25	1.9657	10.75
600186	0.0207	0.3781	0.2999	7.15	-2.81	-8.23	21.34	0.0449	11.86	-1.1383	75.10
600298	0.9939	1.0518	7.8402	13.28	15.68	15.14	25.12	-0.2398	56.95	5.7501	23.21
002385	0.1200	0.3186	2.8058	4.43	36.95	-44.15	18.55	-0.0421	53.02	1.4346	21.00
600596	1.0356	1.2087	8.7563	12.33	37.45	922.25	9.59	1.2948	57.18	5.7954	17.09
000998	-0.0441	2.4487	4.2770	-1.03	13.27	22.39	2.00	-0.1975	46.93	1.6802	90.17

002041	0.1195	0.0333	3.3675	3.58	31.75	83.47	3.56	-0.0332	86.73	1.9807	78.20
002170	0.0633	0.5560	2.2993	2.79	25.57	262.78	3.96	0.0440	61.80	0.6162	34.59
300087	-0.0200	0.0847	1.5028	-1.25	25.61	-194.05	23.07	-0.3743	35.05	0.5780	87.19
300189	-0.0135	0.2682	0.8933	-1.50	15.04	-128.79	-11.95	-0.0037	88.57	-0.3953	-40.74
300159	-0.1604	2.2575	0.8729	-17.00	-11.62	-1910.68	-90.69	0.0090	30.64	-2.4388	-3.15
002470	0.0100	0.5687	1.9239	0.73	-17.28	45.76	-41.96	0.2304	34.99	0.2335	-3.06
002538	0.3500	1.9176	5.5800	6.01	25.7200	88.42	7.46	1.3739	53.48	2.3279	31.03
600097	0.6200	2.5386	8.1560	7.68	-10.9900	1275.68	7.72	0.7292	65.53	3.5391	17.47
600257	0.0162	1.2473	2.4128	0.67	-15.8200	86.44	0.36	-0.0580	56.40	0.0842	783.34
300268	-0.7830	3.9241	-2.9840	-18.49	32.0100	47.50	-142.39	1.3882	10.78	-7.3037	-3.95
002696	-0.0400	2.3670	3.7858	-1.17	-12.7100	-296.61	1.67	-0.1456	50.58	0.3660	73.60
000798	0.0138	1.3794	1.9171	0.72	-23.0500	110.28	-22.43	0.1494	57.18	-0.6107	-16.81
688599	0.3400	5.4458	7.4747	4.56	91.0700	43.71	9.09	0.0603	30.30	1.1349	62.30
300118	-0.1050	5.7867	9.0985	-1.09	11.5200	-126.41	1.98	0.2186	31.38	2.3419	123.75
300490	0.0900	4.2148	6.8903	1.30	-19.2200	194.59	1.71	-0.6487	46.13	1.5331	247.03
300842	0.6800	5.2287	9.0327	7.86	84.3500	41.38	13.27	-1.6796	43.99	2.5949	80.92
002256	-0.0400	0.0224	0.8498	-4.41	-3.9000	-39.37	3.38	0.0065	56.05	-0.1951	215.49
600089	0.8363	2.9984	9.5218	8.07	19.4900	237.64	6.86	1.2774	43.54	4.6923	19.17
002531	0.4500	0.9440	4.0138	11.26	20.1000	47.05	16.81	0.6194	48.26	1.9443	30.11
002202	0.4132	2.8674	7.5564	5.45	-1.9500	45.00	9.14	-0.9677	31.09	3.3303	15.89
300129	0.2483	0.9898	3.7478	6.67	9.0200	54.96	14.22	0.1021	53.94	1.6549	13.85
002176	0.1063	2.2239	1.0252	10.93	124.9700	6442.29	0.92	0.0336	35.03	-2.2304	75.38
300750	1.9416	17.7959	29.5226	6.74	111.9800	131.45	10.91	11.0528	36.32	9.6891	105.90
002594	0.4100	17.3109	28.3995	1.50	27.0600	-29.41	7.45	3.3822	40.06	8.7885	147.09
300014	0.7900	4.3460	8.6256	10.31	103.4700	311.49	15.07	0.1771	58.31	3.1082	56.05
300491	0.0300	2.3281	4.4707	0.67	15.8500	136.24	6.05	-0.0721	71.84	1.0078	64.89
002074	0.0400	4.8638	8.7315	0.44	36.4600	33.30	1.51	0.0672	38.64	2.6144	122.74
600143	0.6144	1.1280	5.7723	10.29	22.7900	-34.44	36.15	0.1137	41.39	3.3646	10.39
300829	0.3900	3.3477	7.4666	5.28	32.8000	7.55	12.32	0.2035	75.93	2.8177	54.25
300243	0.3200	0.2838	3.4339	9.37	26.7100	134.52	12.01	-0.2013	53.53	1.9446	24.75
600309	4.3100	0.6885	18.4129	25.07	52.8500	377.21	22.03	3.5306	36.26	15.8387	15.30
600478	0.0210	0.8491	1.5617	1.37	22.4100	136.63	2.19	0.0137	48.33	-0.2576	224.43

P/E ratio is an inverse indicator (C33), which needs to be processed forward in this article [Formula1]. Formula 2 is used to transform the shareholder equity ratio (C31), and then data processing is carried out by means of averaging each value. The formula is as follows:

Formula 1 Yi=(maxXi-Xi)/(maxXi-minXi)

Formula 2 Yi=-｜60%-Xi｜

Using Matlab, the following data are obtained:

TABLE 7 INDEX EVALUATION VALUE

Index / Stock Code	C11 (CNY)	C12 (CNY)	C13 (CNY)	C14 (%)	C21 (%)	C22 (%)	C23 (%)	C24 (CNY)	C31 (%)	C32 (CNY)	C33 (%)
002481	0.5172	0.1383	0.3710	2.1597	0.7511	0.1677	8.8959	0.1770	0.4468	0.4925	1.0672
003030	0.7195	1.5095	1.3049	0.8504	0.4767	-0.2005	9.4044	0.5196	0.3011	1.2079	1.0652
300511	-0.4605	0.3875	0.6858	-0.9584	0.6907	-0.8004	9.1257	0.2091	0.9522	0.9496	1.0924
600186	0.0596	0.1351	0.0492	1.9302	-0.1124	-0.0453	14.8659	0.0801	2.9105	-0.5499	1.0014
600298	2.8606	0.3760	1.2868	3.5851	0.6271	0.0833	17.4991	-0.4279	0.1844	2.7778	1.0748
002385	0.3454	0.1139	0.4605	1.1959	1.4778	-0.2429	12.9223	-0.0751	0.4220	0.6923	1.0779
600596	2.9806	0.4320	1.4372	3.3286	1.4978	0.0122	6.6806	2.3104	0.1705	2.7997	1.0834
000998	-0.1269	0.8753	0.7020	-0.2781	0.5307	0.1232	1.3932	-0.3524	0.7902	0.8117	0.9801
002041	0.3439	0.0119	0.5527	0.9665	1.2698	0.4588	2.4800	-0.0592	1.6161	0.9569	0.9970
002170	0.1822	0.1987	0.3774	0.7532	1.0226	0.0145	2.7586	0.0785	0.1088	0.2977	1.0587
300087	0.0576	0.0303	0.2467	-0.3375	1.0242	-1.0674	16.0711	-0.6679	1.5085	0.2792	0.9843
300189	-0.0389	0.0959	0.1466	-0.4049	0.6015	-0.7086	-8.3246	-0.0066	1.7273	-0.1910	1.1652
300159	-0.4617	0.8069	0.1433	-4.5893	-0.4647	-10.5084	-63.1766	0.0161	1.7751	-1.1782	1.1120
002470	0.0288	0.2033	0.3158	0.1971	-0.6911	0.2517	-29.2302	0.4111	1.5121	0.1128	1.1119
002538	1.0074	0.6854	0.9159	1.6225	1.0286	0.4865	5.1968	2.4516	0.3942	1.1246	1.0637
600097	1.7845	0.9074	1.3387	2.0733	-0.4395	7.0160	5.3779	1.3012	0.3343	1.7097	1.0829
600257	0.0466	0.4458	0.3960	0.1809	-0.6327	0.4756	0.2508	-0.1035	0.2177	0.0407	0.0000
300268	-2.2536	1.4026	-0.4898	-4.9916	1.2802	0.2613	-99.1919	2.4771	3.6210	-3.5283	1.1132
002696	-0.1151	0.8461	0.6214	-0.3159	-0.5083	-1.6319	1.1634	-0.2598	0.5695	0.1768	1.0035
000798	0.0397	0.4931	0.3147	0.1944	-0.9219	0.6067	-15.6252	0.2666	0.1705	-0.2950	1.1313
688599	0.9786	1.9466	1.2269	1.2310	3.6422	0.2405	6.3323	0.1076	1.7956	0.5483	1.0195
300118	-0.3022	2.0684	1.4934	-0.2943	0.4607	-0.6955	1.3793	0.3901	1.7303	1.1313	0.9326
300490	0.2590	1.5065	1.1309	0.3509	-0.7687	1.0706	1.1912	-1.1575	0.8386	0.7406	0.7583
300842	1.9571	1.8690	1.4826	2.1219	3.3735	0.2277	9.2442	-2.9971	0.9680	1.2536	0.9932
002256	-1.8420	0.0080	0.1395	-1.1905	-0.1560	0.2166	2.3546	0.0116	0.2388	-0.0943	0.8029
600089	2.4070	1.0718	1.5629	2.1786	0.7795	1.3074	4.7788	2.2794	0.9952	2.2668	1.0805
002531	1.2952	0.3374	0.6588	3.0398	0.8039	0.2589	11.7102	1.1053	0.7098	0.9393	1.0650
002202	1.1893	1.0249	1.2403	1.4713	-0.0780	0.2476	6.3671	-1.7268	1.7479	1.6088	1.0851

300129	0.7146	0.3538	0.6151	1.8006	0.3607	0.3024	9.9060	0.1822	0.3664	0.7995	1.0880
002176	0.3059	0.7949	0.1683	2.9507	4.9980	35.4440	0.6409	0.0600	1.5097	-1.0775	1.0010
300750	5.5882	6.3610	4.8457	1.8195	4.4621	0.7232	7.6001	20.5256	1.4317	4.6807	0.9578
002594	1.1800	6.1876	4.6613	0.4049	1.0822	-0.1618	5.1898	6.0352	1.2056	4.2456	0.8996
300014	2.2737	1.5534	1.4158	2.7833	4.1381	1.7137	10.4981	0.3160	0.1022	1.5015	1.0283
300491	0.0863	0.8322	0.7338	0.1809	0.6339	0.7496	4.2146	-0.1287	0.7158	0.4869	1.0158
002074	0.1151	1.7385	1.4331	0.1188	1.4582	0.1832	1.0519	0.1199	1.2914	1.2630	0.9340
600143	1.7683	0.4032	0.9474	2.7779	0.9115	-0.1889	25.1829	0.2029	1.1251	1.6254	1.0929
300829	1.1225	1.1966	1.2255	1.4254	1.3118	0.0415	8.5824	0.3631	0.9631	1.3612	1.0309
300243	0.9210	0.1014	0.5636	2.5295	1.0682	0.7401	8.3664	-0.3592	0.3912	0.5046	1.0726
600309	12.4048	0.2461	3.0222	6.7679	2.1137	2.0753	15.3466	6.3000	1.4353	7.6515	1.0859
600478	0.0604	0.3035	0.2563	0.3698	0.8963	0.7517	1.5256	0.0244	0.7056	-0.1244	0.7902

According to the final weight in Table 6 and the Matlab matrix dot product table 7, we can get the final investment value of each stock as follows:

TABLE 8 STOCK INVESTMENT VALUE

stock code	stock investment value	stock code	stock investment value	stock code	stock investment value	stock code	stock investment value
002481	1.0553	300087	0.4215	688599	1.2142	300750	4.0991
003030	1.0268	300189	0.04	300118	0.5855	002594	2.2316
300511	0.2965	300159	-2.5446	300490	0.5846	300014	1.891
600186	0.9858	002470	-0.0754	300842	1.4271	300491	0.5823
600298	2.0292	002538	1.2295	002256	-0.2451	002074	0.749
002385	0.8889	600097	1.8212	600089	1.7588	600143	1.7963
600596	2.0096	600257	0.1526	002531	1.5433	300829	1.2265
000998	0.3726	300268	-2.713	002202	1.1182	300243	1.2141
002041	0.7718	002696	0.1617	300129	1.0752	600309	4.9053
002170	0.5582	000798	0.0787	002176	3.2662	600478	0.41

3 CONCLUSION:

It can be concluded from the above table 8 that the higher the investment value is, the higher the return is, the better the growth is and the lower the risk is. Among the 40 stocks related to

carbon neutrality selected in this article, the top ten stocks that can be selected from superior to inferior are 600309, 300750, 002176, 002594, 600298,600596, 600097, 600146, 600089,002531.

Investors can use the above stocks as a reference for future investment. At the same time, due to the complexity and unpredictability of the stock market, the analytic hierarchy process can be combined with other evaluation and decision methods to further eliminate the interference of uncertain factors and improve the accuracy of prediction.

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