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Study on the Valuation of Listed Companies in A-Share Venture Sector

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Abstract

In order to study the value assessment of listed enterprises in the chinese market, this paper will select the core indicators and liquidity indicators based on the average interest rate of listed companies, and calculate the quantitative relationship between the indicators using the least squares method. The results showed that the results of the study were very close to the actual situation. The Technology Innovation Committee of Listed Companies has great potential and opportunities, and its evaluation results can help investors make decisions. In order to protect the risk supervision and management of listed companies, the risks faced by listed companies also require relevant departments to strengthen supervision of the securities market, ensure a fair and effective trading environment, and promote the healthy development of China's securities market.

Keywords

GEM Valuation; Least Squares; Time Series Forecasting; EVIEWS; MATLAB.

1. Introduction

Entrepreneurial enterprises have the characteristics of rapid business expansion and unstable profits, and it is difficult to evaluate them in the traditional evaluation system. Therefore, how to evaluate will become a major problem for all types of investors. The Innovation Council is a newly established committee independent of the existing Main Board market. The establishment of the Innovation Commission and the pilot registration system is an important stage in the reform of the capital market. Its purpose is to improve the service capabilities of enterprises in scientific and technological innovation, promote the comprehensive development of the market, and enhance the functions of the market. Recently, Shanghai Securities began to accept applications for issuance by listed companies on the Science and Technology Innovation Board. The evaluation of the Enterprise Technology Innovation Committee is of great significance to investors. Traditional post-evaluation of listed companies usually uses the price-to-earnings ratio method. The post-market evaluation method of the scientific and technological innovation version can adopt the market sales rate method.

2. Literature Review

At present, there is less research on market value in China, and many studies are limited to the theoretical level and lack empirical research. There is little literature on the valuation of NTBs and there are some deficiencies. For example, through the study of the new third-party valuation theory of listed companies, three new valuation methods are proposed. First, select a market valuation method that is similar or similar to the target enterprise and analyze the

ISSN: 2710-0170

important indicators of comparison between them to assess the market value of the target enterprise. The second is the income method, also known as the absolute valuation method, which predicts the discount rate and discount rate of the future income of the enterprise. The third is the tangible option pricing method based on the value of the tangible option, which uses the asset as the selection object for pricing. The new alternative valuation methodology is considered to be applicable to third-party listed companies. This flaw is that the research stays at the theoretical level, and the empirical research is not enough to confirm its feasibility. Peng Pengfei used a combination of theory and practice to introduce traditional value appraisal methods into practice, physical selection and cash discounts, and explored a new method of using commercial technology solutions to evaluate the value of listed companies. However, only a small number of samples have been selected for the valuation of new assets of listed companies, and the theoretical application has yet to be studied. The application of Zhang Ping's combined forecast based on grey correlation analysis and GDP forecasting in Jiangxi Province shows that the weighted analysis of grey correlation has a scientific basis. Optimizing the combination and utilization of different models at different times is conducive to improving the prediction accuracy. Here, we use a matrix corresponding to the grayscale to build a least squares model, quantitatively analyze the main valuation indicators and liquidity indicators of the two markets, and update them by time series analysis. The level of assessment of NTBs after entering the market provides investors with some guidance.

3. Quantitative Analysis of the Main Indicators of the Stock Market based on the Least Squares Method

3.1. Research Ideas

Table 1. The results of the logarithmic transformation regression model of A-share market indicators

Model form	$\bar{R}^2$	$F-statistic$
$Y = f(X1, X2, X3, X4, X5, X6)$	0.042910	1.067251
$Y = f(\ln X1, X2, X3, X4, X5, X6)$	0.011012	1.016702
$Y = f(X1, \ln X2, X3, X4, X5, X6)$	-0.054858	0.921992
$Y = f(X1, X2, X3, \ln X4, X5, X6)$	0.104288	1.174645
$Y = f(X1, X2, X3, X4, \ln X5, X6)$	0.110979	1.187249
$Y = f(X1, X2, X3, X4, X5, \ln X6)$	0.497574	2.485516
$Y = f(\ln X1, X2, X3, X4, X5, \ln X6)$	0.541539	2.771814
$Y = f(X1, \ln X2, X3, X4, X5, \ln X6)$	0.443564	2.195728
$Y = f(X1, X2, X3, \ln X4, X5, \ln X6)$	0.141076	1.246372
$Y = f(X1, X2, X3, X4, \ln X5, \ln X6)$	0.508228	2.550192
$Y = f(\ln X1, X2, X3, \ln X4, X5, \ln X6)$	0.236425	1.464443
$Y = f(\ln X1, \ln X2, X3, X4, X5, \ln X6)$	0.474309	2.353386
$Y = f(\ln X1, X2, X3, X4, \ln X5, \ln X6)$	0.551065	0.841239

The least squares method is used to establish a regression model, the fundamental indicator and the liquidity index are set as explanatory variables, the valuation indicators are interpreted variables, and the quantitative relationship between the variables is derived from regression.

According to the assumption of the variables corresponding to the preceding indicators, taking the operating income (X1), attributable net profit (X2) and return on net assets (X3) of the fundamental indicators, the annual trading volume (X4), the annual average turnover rate (X5) and the annual turnover (X6) of the liquidity indicators as the explanatory variables, and the price-to-sales ratio (Y) of the valuation indicators as the explanatory variables, it is found that

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the simple linear model fit is extremely low and is not suitable as a relationship formula for quantitative analysis, so the variable logarithmic transformation operation is carried out sequentially. The results under different regression models of China's A-share market are shown in Table 1.

It can be seen from Table 1 that in the case of F test passing, when X1 and X6 take the logarithm, the highest goodness of fit is $\bar{R}^2 = 0.541539$, but the goodness of fit is still not high, and the transformation needs to continue.

3.2. Analysis of Results

According to the above model preparation, the exponentiation function of the explanatory variables is found to have the highest goodness of fit when x5 is powered by -2, and the result is shown in Figure 1.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28429.44	5494.726	5.173950	0.0354
LNX1	485.1425	131.2288	3.696921	0.0660
X2	-3.63E-07	1.00E-07	-3.631093	0.0682
X3	16.45367	1.699728	9.680176	0.0105
X4	3.46E-07	3.53E-08	9.788669	0.0103
X5	-1.672774	0.230433	-7.259277	0.0185
LNX6	-1627.776	168.2643	-9.673922	0.0105
X5^-2	-30928666	3966171.	-7.798117	0.0160

R-squared	0.995134	Mean dependent var	37.26463
Adjusted R-squared	0.978103	S.D. dependent var	81.85305
S.E. of regression	12.11240	Akaike info criterion	7.816899
Sum squared resid	293.4205	Schwarz criterion	8.058967
Log likelihood	-31.08449	Hannan-Quinn criter.	7.551351
F-statistic	58.42991	Durbin-Watson stat	2.881288
Prob(F-statistic)	0.016928		

Figure 1. The least squares method regression result of the A-share market

$$\hat{y} = 28429.44 + 485.1425\ln x_1 - 3.63\mathrm{E}-07x_2 + 16.45367x_3 + 3.46\mathrm{E}-07x_4 - 1.672774x_5 - 1627.776\ln x_6 - 30928666{x_5}^{-2}$$

The calculation results of the model show that when other explanatory variables remain unchanged, the price-to-sales ratio will increase by an average of 4.85425% for every 1 yuan increase in operating income. For every 1 yuan increase in annual turnover, the market-to-sales ratio decreases by an average of 16. 27776%. At this time, $\bar{R}^2 = 0.978103$ is close to 1, indicating that the explanatory ability of the model is 97.81%, and the goodness of fit is high. S.E=12.1124 represents an average error of 12.1124 times between the estimated price-to-sales ratio of the valuation indicator and the observed value. At the significance level of 10%, the p-value corresponding to the t-value of the explanatory variable is less than 0.1, indicating that the influence of a single explanatory variable on the price-to-sales ratio is significant, indicating that the quantitative analysis model is valid.

4. Based on Time Series Analysis, the Forecast of A-share Startup Sector to Listed Enterprises

4.1. Research Ideas

A time series model is a model that takes into account the change of variables over time and can also predict future trends. Therefore, we combine the collected data of the A-share entrepreneurship sector on listed companies, and use the index smoothing method to merge the data to merge the valuation of listed companies in the A-share entrepreneurship sector in the next year, and obtain an approximate output value.

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4.2. Research Methodology

Based on the average of the fundamental data of 80 CHINext enterprises in 2018, which represents the indicator level of chinext enterprises in the corresponding year, and takes the data of the liquidity indicators of China's A-share market as the liquidity data of chinext enterprises, and the data processing results (some indicators retain two decimal places) are detailed in Table 2.

Table 2. Fundamental indicators and liquidity data of 80 companies in 2018

year	Operating income / 10,000 yuan	Net profit attributable to the mother / 10,000 yuan	ROE/%	Annual volume/share	Average annual turnover rate/%	Annual turnover / 10,000 yuan
2018	145 322.30	14 531.84	20.86	2 564 500 122	482.91	2 798 074.12

Substituting the data from the above table into the solved valuation quantification model:

$$\hat{y} = 5101.226 + 439.2494\ln x_1 - 0.017221x_2 + 8.092887x_3 - 525.9209\ln x_4 - 0.041136x_5 + 0.00029x_6 - 1.29\mathrm{E}+15{x_2}^{-3} + 0.143071{x_3}^2$$

The average price-to-sales ratio of the Venture Edition in 2018 is -719.6233.
The specific values for the forecast for 2021 are shown in Table 3.

Table 3. Forecast results of valuation levels of enterprises to be listed on the Growth Enterprise Market (GEM)

Time		2021
Price-to-sales ratio - model	forecast	4101.446999
	UCL	21577.74451
	LCL	-13374.85051

The forecast results show that the price-to-sales ratio for 2021 is 4101.446999, and the confidence interval of the forecast is (-13374.85051, 21577.74451). From the forecast value, it can be found that the GEM enterprises have great potential for development, but once listed, they will also face greater risks, and the government and the market should supervise and restrain in a timely manner. It shows a trend of increasing year by year, mostly linear changes, its value is constantly increasing, and the future will maintain a certain rate of growth.

5. Conclusions and Recommendations

5.1. Conclusion

The regression results show that the present value of the CHINext is higher and the valuation fluctuates greatly. This means that the investment risk of the GEM is greater. For investors, the net value of the GEM is very high, which means that companies do not pay much attention to the value of their investments. Investors should pay more attention to the low net worth of the core market. Choosing a large-scale, stable and profitable market is in the interests of small and medium-sized investors and cannot be blindly pursued. At present, there is less research on market assessment in China. Then, taking the average price of listed companies in A-share companies as the evaluation index, with the help of MATLAB, SPSS and Eviews and other tools, the relationship between fundamentals and liquidity index was analyzed, and the quantitative relationship between fundamentals and liquidity index was calculated. Through empirical

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analysis, it is concluded that the sales ratio of the ChiNext Board is expected to increase linearly in the future, and the urgent risks faced by municipal enterprises also require relevant departments to strengthen the supervision of the securities market and establish a fair and effective securities market. The results show that the forecast results are relatively close to the actual situation, and the evaluation results can provide a reference for investors' decision-making.

5.2. Recommendations

5.2.1. Improve the Governance Structure of Listed Companies

Improve the exit mechanism of China's securities market, reform the examination and approval system, and accelerate the implementation of the registration system. Only by opening up the securities market can the survival of the fittest survive in competition.

5.2.2. Regulatory Information Disclosure System

Market information cannot reflect stock prices in a timely and accurate manner, and the information transmission mechanism and pricing methods are seriously distorted, resulting in various factors in the stock market and capital market. It is impossible to make effective use of investment and financing functions. Therefore, it is necessary to strengthen the supervision of the securities management of listed companies in China, establish a more stringent information disclosure system and standards, standardize the dynamic information disclosure of listed companies, and fully support the securities market. Market information can eliminate information asymmetry.

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