Analysis of Growth Influencing Factors of Gem Listed Companies in China: Empirical Study based on the Panel Data of Gem Listed Companies

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Abstract: Based on the current domestic development status and problems of growth enterprises market (GEM) listed companies in China, this paper selects six evaluation indicators among the three dimensions of GEM profitability, solvency and agency cost to constitute an evaluation system, and then extracts panel data from 2017 to 2019 by selecting 566 GEM listed companies that meet the requirements as samples, and mainly uses Empirical analysis method is used to sort out, summarize and integrate the real data of GEM listed companies, and factor analysis method is combined to draw more objective conclusions. Specifically, the profitability of GEM listed companies promotes the growth of the company, while agency cost and solvency are the main factors inhibiting the growth of the company.

Keywords: GEM; Growth; Influencing factors

1. Introduction

After the official listing in 2009, capital can flow more rationally with the help of GEM. By the end of 2020, 892 enterprises have successfully listed on China's GEM, with a cumulative issued share capital of 451 billion shares and a total market capitalization of RMB 10,933.854 billion. [Shenzhen Stock Exchange] With the help of GEM, there are many excellent growth and high-tech enterprises that have grown rapidly and performed well in the market during this 9-year period. We analyze and discuss the internal and external related factors affecting the growth and growth of GEM listed companies in China, and provide feasible theoretical reference studies for the development direction and financing channels of the existing and future GEM listed companies in China.

At present, China is in the deep water of economic reform, the primary market and secondary market are both important areas for enterprise development, and the white-hot market competition will lead to more difficulties for SMEs to establish themselves. The GEM, as a small world to protect the development of SMEs, is crucial to the development of a company. This paper intends to sort out, investigate and integrate the specific data of the listed companies in GEM through empirical research method, to make an in-depth analysis of the factors that have influenced the development of the listed companies in GEM or have the possibility of influencing them, and to make targeted suggestions for improvement, so as to provide theoretical suggestions for the development of the listed companies in GEM in China.

2. Literature review
2.1. Literature review on the concept of firm growth
Huayu Shen [1] found the link between the economy of scale effect and the development and growth of enterprises by comparing the average survival cycle of GEM listed companies and comprehensively analyzing the data and growth pattern during their growth period. Wang Peihai et al. [2] made a specific discussion on the scale development of Small and Medium Enterprises (SMEs), arguing that its process from small to large and weak to strong within a certain period of time can be called the development and growth of SMEs, and that an enterprise must bear the interaction of different directional dynamic factors and forces at different development stages before the combined force can make the enterprise move forward steadily and give rise to the intrinsic development momentum [3].

2.2. Literature review on the impact of financial information on firm growth
Min Zhang [4] constructed a comprehensive assessment index system of company's financial risk based on the company's profitability, solvency, and asset management ability, which specifically contains 17 indicators. Jordan, Lowe, and Taylor [5] conducted a study on the factors affecting the growth of 275 SMEs in the UK using financial data and found that profitability has a positive impact and business risk, among others, had a negative impact on business growth. Cui Zhixia [6] constructed an evaluation model of GEM listed companies through factor analysis and pointed out that the growth of GEM listed companies in China is generally low, and companies need to pay more attention to cash management and develop the two factors of profitability. Wang Jia used mutation analysis to explore the internal growth mechanism of the company and proved that financial effectiveness, human capital strength and profitability are the most important factors affecting Internet finance companies.

2.3. Literature review on the impact of non-financial information on firm growth
Li Shaobo [7] argued that the external competitive environment boundary and external competitive laws of a firm are mainly determined by an industry factor, and internal growth is mainly reflected in several aspects such as a firm's technological innovation ability, the international market potential of its products, its overall business performance and its corporate culture. Yuan, Kong, and Zhang, Chen examined the external competitive environment of a firm by a comparative study of several key elements of the success of micro and small enterprises in China and the United States. The main point of divergence lies in the degree of capital provision, with the United States, as an old market economy, naturally providing greater financial support to SMEs than China.

2.4. Literature review
Through the above studies on the internal growth of SMEs in foreign secondary markets, it is found that foreign scholars mostly study their growth from a non-financial perspective. Some domestic scholars, on the other hand, analyze the impact of factors such as profitability, operating ability, and development motivation on growth enterprises mainly through this aspect of financial information. China is currently late in the establishment of the foundation of the GEM market, this domestic research is relatively late, and the analysis of the growth of China's GEM listed companies mainly focused on the period before 2014. But the GEM market has been growing continuously, and we cannot ignore the research on its growth.

3. Theoretical analysis and hypothesis formulation
3.1. The growth of GEM enterprises is positively related to their profitability
According to Deng Yao, the actual profitability of a listed company is mainly analyzed and judged by the ability to obtain profits, an indicator that is of great interest to both internal and external stakeholders

directly. According to Professor Wu Shinnong, the level of profitability can determine whether an enterprise can be invincible in the fierce market competition; a high level of profitability means high revenue, which has a fundamental role in determining the scale growth and business expansion of the enterprise, and a low level of profitability also means that its internal management structure is unreasonable. Improving the profitability of companies will give them more surplus and resources as well as greater human material and financial resources for future development, even in the face of unknown risks, and will give them sufficient human and material resources to guarantee their sustainable development [8]. Accordingly, the following assumptions are made in this paper

Hypothesis 1: The internal growth of GEM listed companies is positively proportional to their profitability.

3.2. The growth of GEM enterprises is positively related to their solvency

Solvency is the ability of an enterprise to use all its own assets to return principal and interest within an agreed time and legal period. It is also one of the measures for evaluating whether an enterprise's operation and profitability status are good or not. Many companies will use external debt to relieve short-term or long-term capital pressure, revitalize external resources, and maximize benefits at the lowest cost. This approach, if used properly, can bring investors more income and transfer some of the risk [9]. Small and medium-sized enterprises that are in the early stage of survival and growth and have good survival and development are usually chosen to be listed on the GEM, because their business risks are relatively high and their ability to refinance is relatively weak, they must have a certain level of solvency in order to effectively prevent bankruptcy due to their inability to repay their debts in time. Accordingly, this paper puts forward the second hypothesis.

Hypothesis 2: The growth of GEM listed enterprises is positively related to their solvency ability

3.3. There is a negative relationship between the growth of GEM enterprises and their agency costs

Jensen and Mechling have proposed that when the ownership and management of a company are separated, the shareholders and managers of the company will thus have a kind of conflict of interest, which is the cost of incurring the cost of principal-agent fees. Dan Li showed that high corporate agency fees are not conducive to internal growth by sorting out and analyzing relevant data of A-share listed companies. Agency fees are an important part of the business operating costs, and the more they are spent, the higher the business operating costs and the profitability will be reduced. At the same time, it is likely to violate the legal rights and interests of minority shareholders, which is a very serious negative impact on the survival and growth of the enterprise [10]. Accordingly, this paper proposes hypothesis 3.

Hypothesis 3: The growth of GEM listed companies is inversely proportional to their agency costs

4. Empirical analysis of factors influencing growth of GEM listed companies in China
4.1. Sample selection and data sources

This paper selects 566 listed companies officially listed on the GEM of Shenzhen Stock Exchange (SZSE) before December 31, 2017 as the research sample, and the research window is chosen from 2017-2019 to study and analyze the factors affecting the growth of enterprises. However, due to the existence of extreme values for some companies in 2017, which would affect the overall research results, they were excluded to ensure the scientific nature of the study. By the end of 2017, there were no ST companies among these 566 companies. The data in this article are partly from the Shenzhen Stock Exchange website and partly from the "Guotaian database."

4.2. Variable definition and test model
4.2.1. Definition of variables

(1) Growth: The growth rate of the company's revenue is expressed as the growth rate of the company's revenue.

(2) Earning: It is shown by the company's earnings per share.

(3) Cash: Expressed as cash ratio of operating income.

(4) Leverage: It is an important tool for companies to revitalize their resources and assets, as shown by their gearing ratio.

(5) Liquidation: It is the company's ability to repay its creditors within the agreed or legal limits and can be expressed as a current ratio.

(6) Expansion: It is one of the most important indicators of a company's financial strength, which can be shown in terms of the reserve per share.

(7) Risk: This can be expressed as a financial leverage factor.

(8) Size: Displayed as a logarithm of the total number of assets.

(9) Agent: Displayed as an overhead rate.

4.2.2. Testing the model
According to the previous hypotheses and inferences, the regression equations are established separately for testing:

$$Growth=\beta_1+\beta_2*Asset+\beta_3*Cash+\beta_4*Leverage+\beta_5*Expansion+\beta_6*Risk \qquad (4.1)$$

$$Growth=\beta_1+\beta_2*Asset+\beta_3*Cash+\beta_4*Leverage+\beta_5*Expansion+\beta_6*Risk+\beta_7*Earning \qquad (4.2)$$

$$Growth=\beta_1+\beta_2*Asset+\beta_3*Cash+\beta_4*Leverage+\beta_5*Expansion+\beta_6*Risk+\beta_7*Earning+\beta_8*Liquidation \qquad (4.3)$$

$$Growth=\beta_1+\beta_2*Asset+\beta_3*Cash+\beta_4*Leverage+\beta_5*Expansion+\beta_6*Risk+\beta_7*Earning+\beta_8*Liquidation+\beta_9*Agent \qquad (4.4)$$

Model (4.2) is used to test hypothesis 1, model (4.3) is used to test hypothesis 2, and model (4.4) is used to test hypothesis 3

4.3. Empirical results and analysis
In this paper, we select representative and typical companies from the GEM market of SZSE, collect, count and organize the data scientifically, and then discuss the relationship between each covariate and the whole systematically, and substitute the data into the following models to argue respectively.

4.3.1. Multiple regression analysis
The F-values of the regression results can show that all the regression models are highly significantly similar and the test results show that all the models by the results of the regression equations in **Table 1** can be found. Good profitability can positively influence the growth of a company, and the higher the level of profitability, the better its growth will be, hypothesis 1 is proved. There is a negative relationship between the company's growth and its solvency. In the hypothesis, there is a positive relationship between the company's growth and its solvency, but the empirical results are negative and the coefficient is -0.02. The growth of the company is negatively correlated with agency cost and the observed coefficient shows that agency cost is the most important factor that affects the growth of the company.

Table 1. Regression result

Variables	1	2	3	4
	est1	est2	est3	est4
	Growth	Growth	Growth	Growth
Earning	0.2103***	0.2097***	0.1901***	0.1987***
	-11.01	-10.928	-9.921	-9.686
Cash	-0.0828	-0.0829	-0.0555	-0.0266
	(-1.232)	(-1.232)	(-0.840)	(-0.413)
Liquidation	-0.0222***	-0.0216***	-0.0198***	-0.0129***
	(-6.965)	(-6.319)	(-5.846)	(-3.245)
Expansion	0.0424***	0.0420***	0.0446***	0.0467***
	-5.03	-4.947	-5.273	-5.444
Risk	-0.0384***	-0.0390***	-0.0437***	-0.0513***
	(-3.298)	(-3.301)	(-3.704)	(-4.206)
Size		0.0056	-0.0055	-0.0145
		-0.484	(-0.478)	(-1.179)
Agent			-0.5466***	-0.5246***
			(-5.673)	(-5.434)
Leverage				0.2019**
				-2.489
Constant	0.2796***	0.1589	0.4765*	0.5775**
	-9.869	-0.639	-1.903	-2.258
Year	Control	Control	Control	Control
Observations	1,683	1,683	1,683	1,683
R-squared	0.192	0.192	0.204	0.208
r2_a	0.188	0.188	0.2	0.203
F	38.45	33.69	33.55	30.52

Robustt-statistics in parentheses
***p<0.01, **p<0.05, *p<0.1

4.3.2. Robustness test

To test the robustness of the research findings, this paper adds firm fixed effects to the regression model [11]. To examine the robustness of the empirical results. After the robustness test of the above data by this

method, the conclusions are found to be highly consistent with the findings of this paper, which is fully positive that the research of this paper is scientific.

5. Conclusions

5.1. Conclusions of the study

The main experimental results derived from this paper are as follows:

(1) The growth of an enterprise is directly proportional to its profitability level, and the higher the profitability level of an enterprise, the better the endogenous growth of the company. The higher the level of profitability, the better the endogenous growth of the company. The sustainable operation of the company is based on the good profitability and the perfect internal management structure, based on which the company can achieve healthy operation.

(2) There is a negative correlation between the company's growth and its solvency, in the hypothesis, there is a positive correlation between the company's growth and its solvency, but the empirical results are negative, and the coefficient is -0.02. Because of the bonding effect of current liabilities, the current assets and the gearing ratio show a positive and negative correlation between the two. The negative correlation is more obvious for the companies whose current liabilities account for a larger proportion of total liabilities, and most of the listed companies in GEM belong to such companies.

(3) The growth of the company is negatively correlated with agency cost, and the coefficient of observation shows that agency cost is the most important factor affecting the growth of the company. The higher the amount of agency costs, the higher the stickiness of costs and expenses, which will affect the allocation and efficiency of human capital and social and economic resources of the company to a certain extent, and the company will become unable to continue to maintain good operating performance, which in turn will cause the growth of the company to be affected in some negative ways.

5.2. Insights

(1) The government should create a business and investment environment that is conducive to business growth

Improve the legal environment. It can not only regulate market players to maintain proper competition, but also bring more ways and space for the development of GEM listed companies, provide institutional basis for their development and growth, and facilitate the bursting of market players' vitality.

(2) The market regulator should increase the innovation to provide a strong institutional guarantee for the growth of the company

Improve the screening mechanism. Introduce meticulous listing conditions, carefully screen and review them at the time of their listing, so as to push good companies to a larger market, and seriously point out problems and order rectification for companies that do not meet the conditions.

(3) Listed companies on GEM should be trained both internally and externally and face up to their growth "shortcomings"

Enterprises themselves can also establish an effective financial incentive mechanism among themselves, so as to effectively alleviate the contradiction between enterprise management and enterprise shareholders.

Disclosure statement

The authors declare no conflict of interest.

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