

# **An Empirical Study on the Financing Capability and Influencing Factors of Small and Medium-sized High-tech Enterprises**

## **-- Based on the Background of Scientific and Technological Financial Reform in Wenzhou Independent Innovation Demonstration Zone**

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### **Abstract**

Wenzhou was officially approved by the State Council to build a national independent innovation demonstration zone in February 2018. In 2019, the "Wenzhou National Independent Innovation Demonstration Zone Science and Technology Financial Reform and Innovation Implementation Plan" was issued. In the past two years, Wenzhou's High-tech industries have developed rapidly, and to help High-tech enterprises development, Wenzhou vigorously promoted the reform of science and technology finance, launched many innovative financial products, implemented in practice and achieved good results. In this context, what is the financing ability of small and Medium-sized High-tech enterprises? This paper selects the data of 60 small and Medium-sized High-tech enterprises in Wenzhou Longwan High-tech Zone from 2019 to 2020 as the research sample, and conducts an empirical analysis on the influencing factors of financing ability by constructing a regression model. . The study found that the growth ability and technological innovation ability of enterprises have a significant positive correlation with the financing ability of small and Medium-sized High-tech enterprises, and the profitability and internal accumulation level have a significant negative correlation with the financing ability of small and Medium-sized High-tech enterprises. According to the research conclusions, relevant countermeasures and suggestions are put forward from the government, financial institutions and small and Medium-sized High-tech enterprises themselves.

### **Keywords**

**Small and Medium-sized High-tech Enterprises; Financing Capacity; Influencing Factors.**

### **1. Introduction**

As a knowledge and technology-intensive industry, High-tech industry realizes industrial upgrading through continuous technological innovation, so that the national economy can maintain and develop continuously. General Secretary Xi Jinping emphasized in the report of the 19th National Congress of the Communist Party of China that the development of High-tech industries is conducive to the transformation and upgrading of my country's industrial structure. Encourage the development of High-tech enterprises in China. Because of the transformation of old and new kinetic energy to create new engines and cultivate new kinetic energy, my country's High-tech enterprises have become the backbone of my country's industrial transformation. Wenzhou High-tech Zone has been officially approved by the State Council to build a national independent innovation demonstration zone since February 2018, which will provide Wenzhou with an excellent opportunity to fill the shortcomings of scientific and technological innovation and stimulate the vitality of private enterprises to create a new

highland for private economic innovation and entrepreneurship. Since 2019, Wenzhou's scientific and technological innovation work has taken the national independent innovation demonstration zone as the main battlefield for high-quality construction, strengthened the construction of innovation platforms, strengthened government-industry-university-research cooperation, and supported High-tech industries. The technological innovation activities of High-tech enterprises have the characteristics of large investment, long R&D cycle and high risk. Difficulties in financing and financing channels will hinder technological innovation and progress and the development of High-tech industries. The science and technology industry and the financial industry are the two wings of the rapid development of my country's High-tech enterprises. Among them, technology-based enterprises are the symbol of my country's industrial transformation and upgrading, and an important part of national innovation and construction. After an enterprise has a project that can be put into production, timely and sufficient capital investment has become a key factor in its development and growth. Especially as the carrier of High-tech industry development, technology research and development, and the transformation of scientific and technological achievements, technology-based enterprises usually have huge demand for capital and difficulty in financing. Therefore, there is a demand for personalized financial services. The system has become the key to supporting the development of technology-based enterprises. The "Wenzhou National Independent Innovation Demonstration Zone's Implementation Plan for Technological Finance Reform and Innovation" issued in 2019 included ten specific key tasks, including the development of specialized institutions for technological finance and the promotion of innovation in technological credit services, on the agenda of Wenzhou's technological finance reform. By 2022, Wenzhou will establish a technology-finance integration mechanism, improve the technology-finance service ecosystem, explore new ways of high-quality development of the private economy, and basically realize the continuous enrichment of technology-finance products and services, rapid growth in institutional equity investment, and significant enhancement of direct financing for technology companies. Therefore, the financing methods, financing modes and conditions of small and Medium-sized High-tech enterprises in Wenzhou will undergo great changes. To study and analyze the financing capacity and influencing factors of small and Medium-sized High-tech enterprises based on the financial reform background of Wenzhou Self-Created Zone, and then put forward relevant suggestions, which have important practical significance for improving the financing capacity of High-tech enterprises in this city and promoting the innovation and reform of science and technology finance.

## **2. An Overview of the Development of High-tech Industries in Wenzhou**

Wenzhou builds a national independent innovation demonstration zone. The self-created zone takes Wenzhou National High-tech Zone (Southern Zhejiang Science and Technology City) as the core, and combines the core area of the southern Zhejiang industrial cluster, the core area of the Oujiangkou industrial cluster, Wenzhou Higher Education Park, and Yueqing Smart Electric Province. A High-tech industrial park and Ruian Park in the self-created area, build a development pattern of "one district and five parks", and create a new highland for private economic innovation and entrepreneurship in the new era. In the past two years, the construction of the national independent innovation demonstration zone has accelerated and improved efficiency. According to the 2022 government work report and the 2021 Wenzhou Statistical Bulletin, the number of High-tech enterprises in 2021 will exceed 3,000, and 763 will be added throughout the year. The proportion of industry reached 64.7%. The total profit of the High-tech industry manufacturing industry increased by 11.6%. Among the industries above designated size, the added value of High-tech industries increased by 8.9% over the previous year, accounting for 64.7% of the industries above designated size. Among them, Longwan District (High-tech Zone) surrounds the national self-created zone, and as the core of

the self-created zone, it constantly highlights According to the government work report of Longwan District in 2022, Longwan District has thoroughly implemented the new three-year action plan of "double growth" of technology enterprises, and has accumulated 254 High-tech enterprises and 1,175 provincial technology-based small and Medium-sized enterprises. The city was the first to introduce new economic enterprise cultivation methods, and a total of 9 district-level eagle enterprises and 20 gazelle enterprises were identified. According to the work summary of the Longwan District Science and Technology Bureau of Wenzhou City in 2021, the growth rate of investment in High-tech industries in Longwan District is 79.7%, the growth rate of R&D expenses for above-standard industries is 36.9%, and the growth rate of added value of High-tech industries is 17.2%. develop rapidly.

### **3. Overview of Wenzhou's Scientific and Technological Financial Reform to Help High-tech Enterprises Develop**

The pace of Wenzhou's technological financial reform has been moving forward. As early as 2018, under the guidance of the Wenzhou Municipal Government, Bank of Hangzhou established Wenzhou's first science and technology franchise branch in Wenzhou Science and Technology Finance Center, South Zhejiang Science and Technology City, focusing on supporting technology-based enterprises and High-tech enterprises. Enterprises, cultural and creative enterprises, and companies to be listed and listed, release financial innovation products such as risk pool loans, technology guarantee insurance loans, intellectual property pledge financing, equity pledge financing, and order financing. In the past two years since 2019, according to the "Wenzhou National Independent Innovation Demonstration Zone Technology Finance Reform and Innovation Implementation Plan", Wenzhou has actively explored the management of science and technology branches, the assessment and evaluation of commercial banks, the sharing of risks between government, finance and enterprises, and the linkage of investment and loans. On January 5, 2021, my country's first technology property rights securitization product "Xingye Yuanrong-Wenzhou Technology Property Rights Assets Support Special "Plan" was listed on the Shenzhen Stock Exchange, successfully activated 56 "hard-core" technical property rights of 12 small and Medium-sized technological private enterprises in Wenzhou, obtained 190 million yuan in financing, and entered the securities market, providing "Wenzhou" for the exploration of national technology property rights securitization. sample".

Among them, Longwan District, one of the main urban areas of Wenzhou, fully supports the development of small and micro enterprises in the region, actively explores the reform and innovation of science and technology finance, helps science and technology enterprises to break through the bottleneck of financing, and builds a "full closed-loop" service for the construction of Wenzhou National Independent Innovation Demonstration Zone. Technology financial service system. At the same time, it has broadened the channels for enterprises to find capital, graft capital, and embrace capital, effectively solve the problem of "difficult, expensive and slow" financing, realize the fast, convenient and seamless connection between scientific and technological resources and financial capital, and create a deep integration of Wenzhou's technology and finance. Template. In order to help these "asset-light, technology-heavy" small and Medium-sized enterprises solve problems such as insufficient funds and support their development, Longwan District and Longwan Rural Commercial Bank have developed a "specialized loan" product for intellectual property pledge financing, changing "equity assets" into credit The value of assets and intellectual property rights has been further developed. Longwan District has also established a risk-sharing mechanism of "government + bank + guarantee institution" to guide financial institutions to jointly customize financial services such as bank-investment joint loans and credit guarantees for enterprises, and promote technology banks and guarantee companies to cooperate in establishing technology enterprise loan risks.

Compensate the fund pool and effectively reduce the financing risk of enterprises. Hangzhou Bank Science and Technology Sub-branch innovatively launched the "Science and Technology Guarantee Loan" product, relying on the municipal financing guarantee company to provide technological guarantees, and issued corporate loans in total. Relying on the Wenzhou Science and Technology Financial Center, it effectively integrates resources such as technology banks, venture capital, guarantees, and financial intermediaries to create a comprehensive service platform covering the entire process of financing docking, screening, matching, negotiation, and tracking services.

## **4. Empirical Research on the Financing Ability and Influencing Factors of Small and Medium-sized High-tech Enterprises**

### **4.1. Theoretical Analysis of Factors Affecting Financing Capacity and Research Hypothesis**

The existing financing methods of enterprises can be divided into exogenous financing and endogenous financing. The so-called endogenous financing is to use the internal retained earnings of the enterprise to obtain funds for production and operation; the exogenous financing refers to the enterprise obtaining financial support from the outside, which can be divided into debt financing and equity financing. It is assumed that the financing decisions of enterprises are rational, and the decisions made by managers are a reflection of factors such as the company's own capabilities and external financing environment. The index of enterprise financing ability is used as the explained variable in the regression model, and should be measured scientifically and reasonably. This paper mainly studies the factors that affect debt financing. The asset-liability ratio can be used to evaluate the operating condition and solvency of an enterprise in a certain period. It also reflects the ability of enterprises to obtain debt financing, because only when the financial status of the enterprise is in good condition and its solvency is strong, can the enterprise gain the trust of creditors, and financial institutions such as banks will provide credit to the enterprise. This situation is reflected in the enterprise. changes in the asset-liability ratio. It is believed that the main factors affecting endogenous financing of small and Medium-sized High-tech enterprises are profitability, ability to resist risks and internal accumulation level; the main factors affecting external financing are enterprise scale, asset guarantee value, operating ability, enterprise growth ability and technological innovation. capabilities and make the following assumptions:

Hypothesis 1: Firm size is positively related to financing ability. Large-scale enterprises have higher comprehensive strength level, faster access to information, relatively low degree of asymmetry, relatively more mature and stable operation and management capabilities, easy access to government financial support, and the more assets that can be used for mortgage, the better. It is easy to win the willingness of banks to lend. In this paper, the logarithm of total assets is used to represent the variable of firm size.

Hypothesis 2: The profitability of a firm is negatively related to its financing ability. When financing, enterprises will give priority to low-cost internal financing, followed by debt financing from financial institutions such as banks. The higher the profitability of an enterprise, the higher its own accumulation level will be. The products of High-tech enterprises have high technology content, and the products will bring high profits to the enterprise after the product is circulated. Reduced need for debt financing. In this paper, gross profit margin and ROE are used as proxy profitability variables.

Hypothesis 3: The ability of enterprises to resist risks is positively related to their financing ability. The stronger the ability of the enterprise to resist business risks, the higher the ability to realize funds, the safer the assets, and the easier it is to obtain the trust of creditors, banks

and other financial institutions to obtain loans; in this paper, the enterprise uses net assets per share and current ratio to represent the ability to resist risks .

Hypothesis 4: A firm's operating capability is negatively correlated with its financing capability. The stronger the operating ability of the enterprise, the better the ability of various assets to earn profits, and will rely more on internal financing, and will give priority to the retained earnings of the enterprise, that is, tend to first internal source financing and then external source financing. Kaplan (2008) analyzed data from different countries and found that High-tech enterprises with stronger operating capabilities have less debt. In this paper, enterprises choose inventory turnover ratio as a proxy for operating capacity variable.

Hypothesis 5: Enterprise growth ability is positively related to financing ability. In the case of information asymmetry, when creditors examine corporate credit, they generally believe that companies with stronger competitiveness and better growth prospects have better credit conditions. Therefore, the growth ability of the enterprise can reflect the size of the external financing ability of the enterprise to a certain extent. The faster the company's sales revenue grows, the stronger the growth capability, and the more monetary capital it needs. In this paper, the growth rate of total assets and the growth rate of net profit are used as proxy variables of growth capacity.

Hypothesis 6: The level of internal accumulation of a firm is negatively related to its financing capacity. The internal accumulation of enterprises mainly comes from undistributed profits, indicating that enterprises can use more of their own funds for production and operation. The higher the level of internal accumulation of an enterprise, the more it can meet its operating needs through its own funds, so the demand for debt financing will decrease. External financing will only be considered when the internal financing of the enterprise is insufficient. Thus, when the level of internal accumulation rises, firms will cut back on external financing. This paper chooses the ratio of undistributed profits to total assets as a proxy variable to measure the level of internal accumulation.

Hypothesis 7: Asset mortgage ability is positively correlated with financing ability. From the creditor's point of view, in order to avoid risks, the debtor will be required to provide corresponding asset security. When the value of the security assets provided by the enterprise is greater, the default risk borne by the creditor is smaller, and the higher the creditor's trust in the enterprise, the more the enterprise is Easy to get loan. Due to information asymmetry, financial institutions will require companies to provide collateral such as fixed assets and products to prevent companies from failing to repay their debts when they are due. Under the reform of science and technology finance, intellectual property rights such as patented technology of High-tech enterprises can also be used as collateral for loans, so this paper uses the proportion of fixed assets, inventory and intangible assets in total assets as a proxy variable to measure the value of asset guarantees.

Hypothesis 8: There is a positive correlation between technological innovation ability and financing ability. High-tech enterprises mainly maintain their core competitiveness and make profits by providing technological products or services. Therefore, technological innovation capabilities must be considered. The technological investment of enterprises can measure the technological innovation capabilities of High-tech enterprises. This article uses the proportion of enterprise technicians as a measure. Proxy variables of technological innovation capability.

## 4.2. Sample Selection

This paper takes the financial data of 60 small and Medium-sized High-tech enterprises in Longwan High-tech Zone in 2019 and 2020 as the research sample, and excludes some samples with missing data, resulting in a total of 108 sample data.

### 4.3. Model Construction

In this paper, the asset-liability ratio is used as an explained dependent variable to measure corporate financing. Selected 11 variables that can represent the company's scale, profitability, ability to resist risks, operating ability, growth ability, internal accumulation level, asset guarantee ability, and scientific and technological innovation ability. The model settings in this paper are as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \varepsilon$$

Among them, Y is the explained variable - asset-liability ratio, Xi is the explanatory variable - X<sub>1</sub>: asset scale; X<sub>2</sub>: gross profit margin of sales; X<sub>3</sub>: return on equity; X<sub>4</sub>: net assets per share; X<sub>5</sub>: current ratio; X<sub>6</sub>: inventory turnover rate; X<sub>7</sub>: total asset growth rate; X<sub>8</sub>: net profit growth rate; X<sub>9</sub>: internal accumulation level; X<sub>10</sub>: asset guarantee capability; X<sub>11</sub>: technological innovation capability;  $\varepsilon$ : is a random error term.

### 4.4. Analysis and Discussion of Results

#### 4.4.1. Regression Analysis

The explained variables need to go through the multicollinearity test to prove whether it is effective and whether there is a multicollinearity problem, so the variance inflation factor (VIF) analysis of the related variables is carried out. The verification effect is that the VIF values of variables X<sub>1</sub>-X<sub>11</sub> are 1.684, 1.759, 1.102, 1.046, 1.532, 1.511, 1.985, 1.980, 1.479, 1.633, and 1.308, respectively. It can be seen that all explanatory variables have tolerances above 0.1 and variance inflation factors below 10. Therefore, the explanatory variables selected in this paper do not have multicollinearity problems.

Further regression analysis was performed on the model to verify the fitting effect of the regression model. Judging by the R-square of the model fitting degree, the larger the R-square value, the higher the fitting degree of the model to the sample data, and the value usually ranges from [0,1]. Generally speaking, if R-square is greater than 0.6, it means that the fit of the model is excellent. The R-square value of the model is 0.996, and the adjusted R-square is 0.996, which can explain more than 99.6% of the variables, indicating that the model fits the sample data very well. To verify the obvious situation of the regression model, the F-test value of the model is 2330.622, and the value of Sig is 0.00, which proves that the verification has passed, so we can conclude that the created regression model fits well. When DW (standard estimated error value) generally requires 1.5-2.5, the residual and independent variables are independent of each other. The DW value of the regression model is 1.793, indicating that the model has no collinearity problem, and this model can be used.

According to the verification results of the model regression, it can be seen whether the linear effect of the explanatory variables on the explained variables is obvious, and the criterion is that the Sig value is less than 0.05. Through data modeling calculation, it can be known that the gross profit margin of sales, inventory turnover rate, total asset growth rate, revenue growth rate, and net profit growth rate have obvious linear effects on the explained variables. Remove the insignificant independent variables, substitute the obvious explanatory variable coefficients into the multiple regression equation model, and obtain the following regression equation:

$$Y = 2.183 - 1.564X_1 + 2.366X_2 + 0.027X_3 - 0.821X_4 + 0.831X_5 + \varepsilon$$

#### 4.4.2. Results Discussion

Through the above empirical analysis, the significant explanatory variables are five indicators of profitability, growth ability, internal accumulation level, and technological innovation ability. Among them, growth ability, technological innovation ability and financing ability are in direct

proportion, while profitability and internal accumulation level are opposite. The regression results of these five indicators are consistent with the hypothesis. The remaining indicators are not very closely related to financing capacity, which is inconsistent with the assumptions. The reason may be that due to institutional reasons, the cost of financing for Chinese enterprises in the open market is far lower than the cost of debt, and the implicit role of equity financing in business operations is even greater. Therefore, High-tech enterprises tend to adopt equity financing. Financing method, the difference from the classic theory of capital structure and the general situation of western enterprises is realistic and reasonable in our city. Judging from the actual situation of the factors affecting financing among High-tech enterprises in our city, High-tech enterprises in our city are passively selective in the use of debt, debt has not yet become an important means of enterprise risk management, and banking institutions have adopted measures for High-tech enterprises. Credit policies have further contributed to this phenomenon. High-tech enterprises in our city urgently need to establish the concept of rational use of liabilities, and master how to reasonably carry out liabilities.

## **5. Countermeasures and Suggestions for Improving the Financing Ability of Small and Medium-sized High-tech Enterprises**

According to the above research results, it can be seen that the financing ability of High-tech enterprises is affected by various factors, and if small and Medium-sized High-tech enterprises want to grow and develop, they not only need to broaden the financing channels and increase the amount of financing, but also need the efforts of the society.

From the perspective of the government, strengthen the construction of laws and regulations matching the financing of small and Medium-sized High-tech enterprises, and use preferential policies to promote more financial institutions to open up credit business; establish a credit system for small and Medium-sized High-tech enterprises, effectively reduce the information cost of banks, and allow good It is more convenient for enterprises with credit records to obtain credit funds; establish and improve a credit guarantee system for small and Medium-sized enterprises, a risk control and prevention system for credit guarantees; and increase support for the venture capital industry. It can create a favorable external policy environment for the development of venture capital and support the development of venture capital by improving laws and regulations, strengthening intellectual property protection, and formulating preferential policies for fiscal, taxation and credit; actively promote the establishment of a multi-level capital market system and improve venture capital Establish a smooth exit channel for venture capital; actively develop venture capital funds, attract private funds into the field of venture capital, and broaden the sources of capital for venture capital; improve the efficiency of the guarantee and mortgage system, and reduce transaction costs between banks and enterprises. Develop a multi-level securities market system, establish a ChiNext market with small and Medium-sized High-tech enterprises as the main body on the basis of the existing SZSE SME board, selectively restore local securities trading centers, improve the construction of my country's property rights trading centers, and gradually Construct a sound multi-level securities market system to create favorable conditions for providing diversified financing channels for small and Medium-sized High-tech enterprises.

From the perspective of financial institutions, improve the financial service system, actively explore the innovation of financial instruments, pay attention to the credit problems of small and Medium-sized High-tech enterprises, and actively explore the innovation of financial instruments, such as unsecured loans, intellectual property loans and equity pledge loans, which are in line with the "light and light" of small and Medium-sized High-tech enterprises. The loan method with the characteristics of "asset" and online business based on the Internet platform make financial institutions more convenient and efficient when providing financial

services, and improve service efficiency; accelerate the construction of third-party insurance guarantee intermediary service platforms and service systems. In view of the characteristics of small and Medium-sized High-tech enterprises that can be mortgaged, insurance guarantee institutions should actively explore the innovation of third-party insurance guarantee service models, accelerate the construction of third-party intermediary service platforms, provide insurance-guaranteed loans to small and Medium-sized High-tech enterprises, and provide strong support for corporate financing. .

From the perspective of enterprises, improve the quality and diversity of products and services, and improve their own profitability; optimize their own financing structure, choose financing channels reasonably, pay attention to the construction of company systems, and strengthen the internal control management of enterprises; improve the internal financial management system, improve the enterprise Funding efficiency. Maintain a good relationship between banks and enterprises, pay attention to the disclosure of corporate financial information, maintain information symmetry between banks and enterprises, and improve the efficiency of corporate financing.

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