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Research on Investment Impulse and Overcapacity from the Perspective of Fiscal Intervention

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Abstract **– Overcapacity has become a "stubborn disease" in China's economic development. Empirical analysis is carried out to investigate and test the mechanism and mechanism of government fiscal intervention affecting investment and thus overcapacity. It is pointed out how to correctly use econometric model to analyze real economic problems, so as to obtain stable, reasonable and reliable parameter estimates, and then provide important reference for policy analysis. The research shows that promoting institutional reform and focusing on solving the fundamental drawbacks of the system are the basic requirements of "capacity reduction"; Taking enterprise independent innovation and human capital cultivation as the key, promoting the upgrading of industrial structure is the long-term strategy of "capacity reduction". Expanding consumer demand and accelerating the transformation of economic development mode are the only way to "reduce overcapacity".**

Keywords **– Financial Intervention, Intermediary Channels, Investment Impulse, Overcapacity, Capacity Utilization Rate, Fiscal Intervention.**

I. INTRODUCTION

At present, there are abundant literatures to analyze the causes of overcapacity in China, but there is still a lack of direct micro-empirical evidence on the motivation of local governments, that is, to empirically explore what factors encourage local governments to actively and vigorously support the development of overcapacity industries [1-3]. One of the most direct consequences of ignoring this problem is that even if various support means and policy tools are perfected and optimized, local governments will often continue to "innovate" other countermeasures due to this inherent incentive mechanism, and finally cannot really solve China's overcapacity problem. In this regard, the paper tries to provide micro-empirical evidence of the government's promotion of the development of overcapacity industries from the perspective of fiscal pressure, and analyzes the empirical effect of China's "pressure" financial incentives on the formation of overcapacity and the solution of difficulties, which also provides further evidence for the "government promotion theory". With the deepening of China's market-oriented economic reform, economic education has also undergone earth-shaking changes [4-6]. In less than 20 years, with the efforts of a large number of economists who have returned from studying in the West, Western economics has been fully introduced to China, and the theoretical framework and analytical tools of modern Western economics have become the main reference basis for the government's economic policies. The study of economics by Chinese scholars is gradually in line with that of the world. Following the research paradigm of the world's mainstream economics, quantitative research has become the mainstream of Chinese economic research. Economics, as a highly quantitative subject in the social sciences, cannot be separated from the limitations of the social sciences themselves. The economy itself is a complex system, and the complexity of various variables-observable and unobtrusible-limits the scientification of economics and makes it almost impossible for economics to predict social and economic development [7-9]. The main mission of economics is to help people understand the complex economic world, and more often to put forward reasonable explanations for economic phenomena. By selecting the balance panel data of 36 industrial sectors in China from 2010 to

2020 as research samples, a mediation effect model and a dynamic panel model are constructed to investigate and test the mechanism of government fiscal intervention affecting investment and thus overcapacity. With reference to the research methods and achievements in related fields, combined with research needs and data availability, the following variables will be selected to enter the empirical analysis framework and the measurement model will be established [10, 11].

II. EXPLAINED VARIABLES

Overcapacity index. Capacity utilization rate is a general index to measure the degree of overcapacity. The academic circles have studied and discussed a variety of measurement methods on this index, including peak method, production function method, cost function method, cointegration method, structure vector autoregression (SVAR) method, data enveloping analysis (DEA) and stochastic frontier method analysis (SFA). Each of the above methods has its advantages and disadvantages, but it is worth pointing out that the production capacity output calculated by the cost function method actually refers to the best output when the enterprise engages in production to minimize the cost or maximize the profit, which is a kind of production capacity output at the economic level. The capacity output measured by other methods refers to the output level when all the fixed capital is used to buy the machinery and equipment with the largest production capacity, and the enterprise invests all the production factors to operate the equipment and ensure its effective use, which is a technical level of capacity output. In traditional research, it is usually assumed that the firm will utilize the equipment with the highest production capacity. If this assumption is true, then the production capacity in both senses is equal. But in reality, the enterprise is likely not to choose the largest capacity of the equipment engaged in production, resulting in the existence of non-efficiency factors in production, that is, "backward capacity", in this case, there will be deviations in the two senses of capacity - according to the economic sense of capacity output measured capacity utilization may be high, and cannot reflect the actual use of production resources (or waste). For developed economies with more mature market conditions and market institutions, the capacity deviation in the two senses is small, and the capacity utilization rate measured by the two kinds of methods is applicable and explanatory, but for developing countries, its micro-mechanism may be different. Especially for China, which is currently undergoing the economic transition to a mature market economy, enterprises are faced with complex and changeable market operating environment and institutional background, and production, investment and other decisions are often affected by many non-market factors. Therefore, the assumptions implied in the calculation method of production capacity output in the economic sense are not fully valid for China. The capacity utilization rate calculated based on the technical significance of capacity output may be a more accurate measure of the actual degree and level of overcapacity in China.

Based on the above discussion, the stochastic Frontier Analysis (SFA) model based on the transform production function is used to estimate the overcapacity index of 36 industrial sectors in China from 2011 to 2020 by combining the market demand-supply ratio. The annual average of the overcapacity index of 36 industries in China's industrial sector, when the overcapacity index is greater than 1, it means that the production capacity of the industry exceeds its actual market demand by more than twice, so in the 36 industrial industries, 15 industries have overcapacity. The input-output data used in the measurement of industrial sub-sector overcapacity index () is consistent with the data caliber used in the calculation of other explanatory variables and control variable indexes, which are all the data caliber of industrial enterprises above designated size, so the

accuracy of the research results will not be affected by the inconsistency of data caliber.

III. Explanatory Variables and Mediating Variables

Proportion of investment. The influence of investment on overcapacity is one of the focuses of research and investigation, so the introduction of investment into the econometric model is taken as an important factor that may affect overcapacity to analyze and verify the relationship between the two. The conversion of investment into capital into the production function of enterprises is one of the most important production input factors of industrial enterprises, and it is also the key factor to determine the production capacity of enterprises. Therefore, it is necessary to include the investment level in the study of overcapacity. The results of investigation in related fields have also confirmed that excessive investment is the direct cause of the formation of overcapacity in China.

Tax burden level. Taxation is one of the important means for the government to implement fiscal policy, regulate and intervene in the economy. Tax relief, tax incentives and other means are one of the means for the government to improperly intervene in the economy and attract investment, which can reduce the investment cost of enterprises, thereby triggering investment impulse, resulting in excessive investment, resulting in industry overcapacity. The level of tax burden is selected as an indicator to measure the government's financial intervention. Considering the availability of data, the sales tax burden is chosen here to reflect the level of tax burden faced by various industries. It should be pointed out that in the yearbook of 2010 and later years, the tax statistics were adjusted to the main business income, main business cost and main business taxes and surcharges, so the above statistics were used to calculate the tax burden level for 2004 and later.

Financial subsidy. Financial subsidies are also an important tool for central and local governments to intervene in the economy and one of the means to improve marginal income. Compared with taxation, subsidy is a more flexible and powerful intervention method, and it can be regarded as a production factor entering the production function of enterprises, bringing about the improvement of capital marginal income, inducing excessive production input of enterprises and causing overcapacity. Therefore, financial subsidy is chosen as another indicator representing government financial intervention. Also according to the availability of data, the level of government financial subsidies is measured by the intensity of innovation subsidies. Specifically, the level of subsidies is expressed by the proportion of government funds of various industries in the total funds raised for scientific and technological activities. Due to the adjustment of STATISTICAL items in the yearbook, the indicator is calculated as the proportion of government funds to the internal expenditure of R&D funds of industrial enterprises above designated size after 2008.

IV. Control Variable

Labor employment. Labor is the most important input factor in industrial enterprises besides capital, and the level of labor input determines the production capacity of industrial enterprises to a certain extent, so it is necessary to include it in the investigation framework. The logarithmic number of employees in the industrial sector is selected for consideration here.

Innovation investment. The increase of industry innovation input is conducive to promoting technological progress and the improvement of production level, and will affect the overcapacity at the production level. In addition, the increase in innovation investment can also promote the improvement of product quality and

improve the international competitiveness of products, which will affect excess capacity from the demand level. The ratio of the internal expenditure of science and technology activities of the industry to the total industrial output value is chosen to measure.

Degree of openness. A large number of studies have investigated and verified the influence and role of foreign trade on overcapacity. For China, absorbing foreign investment, joining the global value chain to engage in processing trade and other activities may affect overcapacity from the following three aspects: First, a large number of domestic enterprises may rush into a certain industry in the process of accepting foreign technology and industrial transfer, causing investment "surge"; Second, domestic and foreign capital competition may lead to the bankruptcy and withdrawal of some domestic industries, resulting in the decline of overcapacity in related industries in the short term; Third, the "export learning" effect may promote the product quality and production technical efficiency of domestic industries to alleviate overcapacity from the production side. Considering the availability of data, the openness of industrial enterprises above designated size is measured by the ratio of export delivery value to sales output value.

V. CASE VERIFICATION

This paper selects the balance panel data of 36 industrial sectors in China from 2001 to 2011 as research samples, and constructs a mediation effect model and a dynamic panel model to investigate and test the mechanism of government fiscal intervention affecting investment and thus overcapacity. With reference to the research methods and achievements in related fields, combined with research needs and data availability, the following variables will be selected to enter the empirical analysis framework and the measurement model is established.

Due to the adjustment of the statistical caliber of the data in the yearbook over the past years, the data of the three industries of "other mining industry", "arts and crafts and other manufacturing industry" and "waste resources and waste materials recycling and processing industry" were excluded from the research sample. The descriptive statistical results of each variable and the correlation coefficients of each explanatory variable are presented in Table 1 and Table 2 respectively.

Table 1. Descriptive statistics of variables.

Variable	Sample Number	Mean	Standard Deviation	Minimum	Maximum
EC	396	1.294	1.375	0.1	6.92
Invest	396	0.082	0.099	-0.202	0.804
tax	396	0.089	0.152	0.010	1.170
subs	396	0.034	0.036	0.001	0.322
labor	396	4.921	0.950	2.677	6.709
od	396	0.757	0.570	0.012	2.818
open	396	0.156	0.172	0.000	0.696

Table 2. Correlation coefficients of each explanatory variable.

Variable	Invest	Tax	Subs	Labor	rd	Open
invest	1.000	-0.083	0.263	-0.122	-0.112	-0.291

tax	-0.083	1.000	-0.088	-0.345	-0.158	-0.268
subs	0.263	-0.088	1.000	-0.147	0.051	-0.119
labor	-0.122	-0.345	-0.147	1.000	0.304	0.254
rd	-0.112	-0.158	0.051	0.304	1.000	0.081
open	-0.291	-0.268	-0.119	0.254	0.081	1.000

In Table 1, the average EC overcapacity index of 1.294 indicates that there is an overall overcapacity problem in 36 industries in China, the average investment ratio of invest 0.082 indicates that the average investment ratio of various industries is 8.2%, and the average tax burden level of tax 0.089 indicates that the average tax burden level of various industries is 8.9%, the average value of subs financial subsidy (innovation subsidy intensity, government funds of various industries account for the total amount of funds raised for scientific and technological activities) is 0.034, indicating that the average level of innovation subsidy intensity of various industries is 3.4%. In Table 2, the correlation coefficient between invest and tax is -0.083, and the weak negative correlation between the two indicates that tax burden level has a certain inhibitory effect on industrial investment, the correlation coefficient between invest and subs is 0.263, and the positive correlation between the two indicates that financial subsidies promote the improvement of enterprise investment level.

VI. Conclusion

In essence, China's overcapacity is "institutional excess". Under the institutional background of fiscal decentralization and political centralization, local governments are motivated by financial incentives and promotion incentives, and have strong incentives to stimulate local economic growth by ignoring the impact of social and economic benefits and intervening in enterprise investment decisions, and further take advantage of institutional defects. Fiscal intervention, land support, financial support, and environmental permissibility have led to excessive investment and overcapacity.

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