Research on the Impact of the Development of Listed Companies on Economic Growth-An Empirical Analysis Based on Chinese Data

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Abstract. It is crucial to research the elements that have influenced China's economic development. Based on data from the National Bureau of Statistics of China (NBSC) from 1990 to 2021, this study uses a univariate linear regression model to examine the effect of listed company development on economic growth. To conduct a robustness test, the study uses the number of listed companies on the Shenzhen Stock Exchange (SZSE) rather than the number of listed companies on the Shanghai Stock Exchange (SSE), and it analyzes heterogeneity from various time-frame perspectives. The following are the paper's findings: 1. Economic growth in China is positively impacted by the rise of listed companies. 2. Chinese listed firms had the most effects on economic growth between 2001 and 2008. 3. The tertiary industry, gross capital creation, and net exports of goods and services are all significantly impacted by the growth of listed businesses. 4. The expansion of listed corporations that issue both A and B shares has the biggest influence on the economy. 5. The expansion of listed corporations that trade both A and B shares has the biggest influence on the economy. 6. The most important factor fostering economic progress is the establishment of listed corporations that simultaneously issue A and B shares.

Keywords: listed companies; economic growth; linear regression model; robustness test; heterogeneity analysis

1 Introduction

A listed firm is one that can publicly issue shares on the stock market. It specifically refers to stock limited firms that have been given the State Council's or the State Council-authorized securities management department's approval to be listed and traded on the stock exchange. Listed firms are frequently seen as a key factor in China's economic expansion and as the foundation of the country's capital market. The ability of listed firms to develop to a high standard ultimately decides a nation's capacity to solidify the macroeconomic market and boost the capital market. This study will use one-way linear regression, robustness testing, and heterogeneity analysis to examine the relationship between the growth of listed companies and economic growth using data from the National Bureau of Statistics of China. It will then offer policy recommendations to encourage economic growth.

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2 Literature review

A significant amount of domestic literature has recently examined the link between listed companies and economic expansion. The literature that is closely related to this paper focuses primarily on the investigation of the causal link between the growth of listed companies and economic expansion. The growth of publicly traded companies plays a significant role in determining the level of economic development of a region, according to Chen Peng and Pi Yonghua[1]. The growth of listed companies has evolved into the weathervane of regional economic development and the main driver of the regional economy, as noted by Wang Yandong, Song Bao, and Li Runyu [2–3]. The relationship between the growth of listed companies and regional economic development was examined by Gu Limin [4]. Han Pengcheng [5] discovered a significant association between the quantity of listed firms and the regional GDP and fiscal income. According to Jiang Minjuan [6], listed businesses make up the majority of the capital economy market and their growth has numerous benefits.

The literature that simply investigates economic growth is another form of research relevant to this topic. Guo Qiuqiu and Ma Xiaoyu [7] use a number of econometric models to experimentally investigate the impact of digital finance on economic growth. The Wu [8] analysis demonstrates that the amount of final demand is the most important factor influencing Chinese economic growth. According to Shen Jianmei and Shen Shichang's [9] research, the magnitude of financial development can stimulate economic growth, and the degree of promotion clearly varies by location. Ma Yuekun and Wei Haili [10] empirically examined the impact of stock and bond financing scales on economic growth using VAR and PDL models. Luo Hong et al [11] illustrated the value of inter-industry accounting surplus differences among listed companies in macro forecasting of economic growth.

Based on the research reviewed above, this paper may make the following four contributions: To begin, in terms of research methodology, the propositions are empirically analyzed using a numerical statistic tool, the robustness test is used to discuss the benchmark regression results, and the heterogeneity analysis is based on different time, different industry types, expenditure method, and stock types in China, in order to delve deeper into the impact of listed company development on economic growth. Second, the topic is relevant and adds to scholarly research on the factors driving China's economic growth. Third, the use of comprehensive and new data with a long-term dimension can bring this paper's opinions up to date and reflect China's current financial development and economic growth. Fourth, in the context of China's rapid development in the twenty-first century, the analysis of special phenomena in China's economy and finance is of great theoretical and practical importance, and it is more likely to provide other developing countries around the world with the Chinese experience, Chinese cases, and Chinese realities, as well as to broaden the boundaries of economic and financial theories.

3 Characterizing facts

From 1990 to 2021, Fig 1 depicts the development tendency of China's listed firms (A and B) in the SSE and listed companies (A and B) in the SZSE. SSE stands for Shanghai Stock Exchange, and SZSE stands for Shenzhen Stock Exchange. As illustrated in Figure 1, the number of companies listed on both types of exchanges in China is increasing. Prior to 2003,

the two types of exchanges had a comparable development speed; however, the growth of the number of listed firms in the SZSE stopped from 2003 to 2009, and the number of listed companies in the SSE grew at a slower rate; after 2009, the SZSE caught up, and its number of listed businesses surpassed that of the SSE and increased at a quicker rate. The number of listed firms on the SSE increased at a slower rate before 2017 and at a higher rate after 2017.

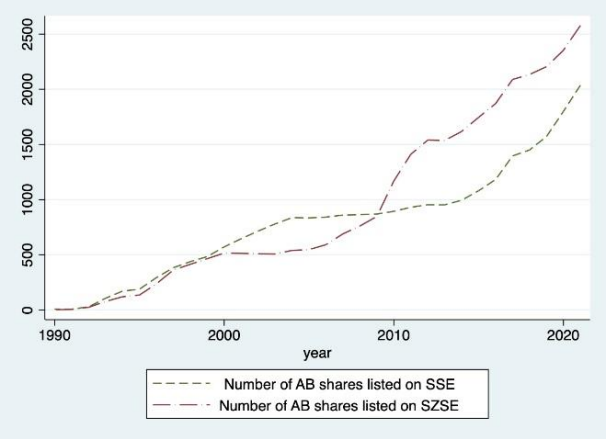

Fig. 1. Development trend of listed companies in China

4 Research design

4.1 Variable selection

This article's explanatory variable is economic growth; based on previous research, this paper uses GDP per capita as a proxy variable to indicate China's economic growth. The number of listed businesses on the SSE is used as the primary explanatory variable in this article to measure the development level of listed companies in China.

4.2 Data sources

In the empirical section of this work, China is chosen as the target of empirical analysis, the observation period is 1990-2021, and the sample data used are from China's National Bureau of Statistics. Table 1 displays the descriptive statistics for all data collected throughout the empirical phase of this work.

Table 1. Descriptive statistics

Variable	Unit	Obs	Mean	Std.Dev.	Min
GDP per capita	yuan	32	26411	24397	1663
Number of domestic listed companies on the SSE, AB shares	share	32	786.6	511.1	7
Number of domestic listed companies on the SZSE, AB shares	share	32	941.1	788.1	2
Value added of primary industry	100 million yuan	32	32574	23711	5017
Value added of secondary industry	100 million yuan	32	151712	135586	7744
Value added of tertiary industry	100 million yuan	32	175990	187307	6112

Consumption	100 million yuan	32	137593	130061	9435
Final consumption	100 million yuan	32	194851	187126	12012
Gross capital formation	100 million yuan	32	155663	152881	6447
Net exports of goods and services	100 million yuan	32	9846	8812	-680
Number of A-share-only domestic listings	share	32	1711	1278	10
Number of A- and B-share domestic listings	share	30	79	17.37	18
Number of B-share-only domestic listings	share	30	96.8	22.22	18

4.3 Modeling

The research model in this paper is a one-way linear regression as follows :

$$Y = \alpha + \beta X + \varepsilon \tag{1}$$

As shown in equation (1), where Y is the explanatory variable GDP per capita, X is the core explanatory variable development level of Chinese listed companies, and ε is the random error term.

5 Empirical analysis

5.1 Correlation analysis

Fig 2 depicts the relationship between the number of listed companies on the SSE and GDP per capita, and the trend on the graph initially shows that the economy grows with the development of listed companies. The relationship between the development of listed companies and economic growth is further confirmed by regression analysis.

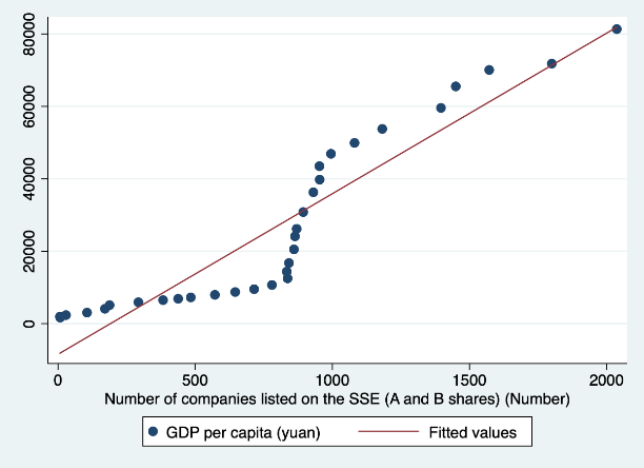

Fig. 2. Correlation between the number of listed companies and GDP per capita

5.2 Benchmark regression analysis

Table 2 Model (1) reports the main regression results of the impact of listed companies' development on economic growth, specifically, the estimated coefficient of the core explanatory variables of the model is 0.7120, which is significantly positive at the 1% significance level.

The regression results preliminarily indicate that, for the Chinese economy, the development of domestic listed companies has a positive impact on economic growth in general at the present time.

Table 2. Benchmark regression analysis, robust type test and analysis of temporal heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)
	y	y	y	y	y	y
x	0.7120***	0.6223***	0.7528***	0.3507***	4.2447**	1.1202***
	(9.1646)	(11.5028)	(9.2390)	(13.6042)	(3.5779)	(8.4686)
_cons	5.2308***	5.8073***	7.5393***	6.6732***	-18.8673*	2.8713**
	(10.6120)	(16.8277)	(14.5837)	(50.1148)	(-2.3714)	(3.0622)
N	32	32	32	12	7	13
R2	0.8642	0.7368	0.8567	0.9487	0.7191	0.8670

5.3 Robustness tests

This research undertakes a robustness analysis to verify the stability and reliability of the benchmark regression estimation results by altering the metrics of listed businesses' progress affecting economic growth. Overall, this paper replaces the core explanatory variable, the number of listed companies in SSE, with GDP per capita for the robustness test, and the empirical results of models (2) and (3) in Table 2 show that the impact of listed companies' development on economic growth is still significantly positive, and the benchmark model is robust.

5.4 Temporal heterogeneity analysis

Based on data feasibility, this research will use China's WTO entrance in 2001 and the onset of the financial crisis in 2008 as time nodes and divide the sample period into three time periods to analyze temporal heterogeneity. Table 2 Models (4), (5), and (6) report the regression results of the impact of listed company development on China's economic growth in 1990-2001, 2001-2008, and 2009-2021, respectively, with the estimated coefficients of the explanatory variables being 0.3507, 4.2447, and 1.1202, and the regression results of models (4) and (6) being significantly positive at the 1% significance level, while the regression result of model (5) is significantly positive at the 5% level of significance. The regression results show that the promotion effect of listed company development on economic growth is greatest after China's accession to the WTO and before the outbreak of the financial crisis, second after the outbreak of the financial crisis, and lowest before China's accession to the WTO. The conclusion demonstrates that while opening to the outside world can successfully exert a beneficial economic influence on the development of listed firms, the impact of the globalization crisis can also limit the economic effect of listed company development.

5.5 Industrial heterogeneity analysis

To conduct an examination of industrial heterogeneity, China's GDP is classified into value added of the main industry, value added of the secondary industry, and value added of the tertiary sector. Table 3 models (1), (2), and (3) present the regression results of Chinese listed companies' development on the value added of the primary industry, the value added of the

secondary industry, and the value added of the tertiary industry, respectively, with estimated coefficients of the explanatory variables of 0.5111, 0.7493, and 0.8417. At the 1% level of significance, all of the regression results are significantly positive. According to the regression results, the development of Chinese listed businesses adds the most value to the tertiary industry, the second most value to the secondary industry, and the least value to the growth of the primary sector.

Table 3. Heterogeneity analysis of industrial heterogeneity and expenditure method

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	y	y	y	y	y	y	y
x	0.5111***	0.7493***	0.8417***	0.6981***	0.7206***	0.7915***	0.7881***
	(9.0470)	(9.9707)	(8.9966)	(9.3242)	(9.3065)	(8.8627)	(7.9222)
_cons	6.9237***	6.7409***	6.1276***	6.9809***	7.1601***	6.3954***	3.7076***
	(19.3157)	(14.1386)	(10.3234)	(14.6968)	(14.5742)	(11.2875)	(5.8313)
N	32	32	32	32	32	32	32
R2	0.7318	0.7682	0.7296	0.7435	0.7427	0.7236	0.6840

5.6 Heterogeneity Analysis of Expenditure Method

To carry out the heterogeneity analysis of the expenditure technique, China's GDP is classified into residential consumption, final consumption, gross capital creation, and net exports of goods and services in this study based on the types of expenditures. Table 3 models (4), (5), (6), and (7) present the findings of a regression analysis of the development of Chinese listed companies on resident consumption, final consumption, gross capital formation, and net export of goods and services, with estimated coefficients of explanatory variables of 0.6981, 0.7206, 0.7915, and 0.7881, respectively. At the 1% level of significance, the regression results are all statistically positive. The regression results indicate that the development of listed businesses in China has the greatest impact on gross capital formation, the second greatest impact on net exports of goods and services, the second greatest impact on final consumption, and the least impact on residential consumption.

5.7 Stock Heterogeneity Analysis

In this paper, based on the type of stock, the number of listed companies is categorized into the number of listed companies in the territory of A-share issuance only, the number of listed companies in the territory of A- and B-share issuance, and the number of listed companies in the territory of B-share issuance only to carry out stock heterogeneity analysis. With estimated coefficients of the explanatory variables of 0.6875, 1.6862, and 1.4599, respectively, Table 4 Models (1), (2), and (3) present the regression results of the number of listed companies in A-share only, the number of listed companies in A and B-share only, and the number of listed companies in B-share only on economic growth. At the 1% significance level, all of the regression's findings are statistically significant positive. According to the regression results, the number of listed companies in the regions where A and B shares are issued has the highest value for promoting economic growth, while the number of listed companies in the regions where B shares are issued only has the second-highest value for doing so. The number of listed companies in the regions where A shares are issued only has the lowest value for doing so.

Table 4. Analysis of industrial heteAnalysis of stock heterogeneityrogeneity

	(1)	(2)	(3)
	y	y	y
x	0.6875***	1.6862***	1.4599***
	(10.9822)	(3.4216)	(3.2619)
_cons	4.9116***	2.4843	3.1782
	(11.1491)	(1.1611)	(1.5642)
N	32	30	30
R2	0.8008	0.2948	0.2754

6 Conclusions

The growth of Chinese listed companies has a greater impact on gross capital formation and net exports of goods and services than it does on final consumption and consumer spending. Based on the number of listed companies issuing various types of shares, the number of listed companies issuing A and B shares has the highest impact on economic growth, while the number of listed companies issuing B shares only has a negligible impact. Second, there is no discernible effect on economic growth from the quantity of domestically listed companies issuing just A shares.

The following three points are where the relevance of the conclusions above lies: First of all, listed firms play a significant role in China's economic development, assuring the steady advancement of high-quality development of listed companies and realizing the ongoing strengthening of the role of listed companies as the "power source" of economic growth. Second, the rapid expansion of the tertiary sector creates an adequate job market and optimizes the entire industrial structure, taking into account the major positive impact of the development of listed businesses on the economic growth of the tertiary industry; third, listed companies issuing AB shares are the biggest contributor to China's economic growth, the government can improve and optimize the business environment to ensure that listed companies with AB shares inject more kinetic energy into China's economic growth in the long term.

Although this study solely looked at how listed company expansion affected economic growth, there may be other factors that have an impact on that growth in China that were not taken into account. Therefore, future research might look into whether factors like employment, resources, the environment, and price indices have had an impact on China's economic growth in a similar way. The central government debt position or different tax revenues, for instance, can be chosen as the main explanatory variables when examining how fiscal policy has affected economic growth. Similarly, when examining resources and the environment, one can explore the platform for the exchange of ecological and environmental science data, the official website of the Chinese Ministry of Water Resources, and China's meteorological data network.

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