

Empirical Study on the Influence Mechanism of B2b e-Commerce Transaction Growth in China

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Abstract: With the growth of B2B e-commerce transaction scale and the gradual optimization of industry structure in China, the external development environment of B2B transaction also needs to be improved. In order to explore the new ideas of current B2B e-commerce development, an econometric economic mode was established between B2B e-commerce transaction volume and cross-border e-commerce transaction volume, the number of websites, and the total logistics cost, based on the relevant data of China's e-commerce from 2000 to 2018, and analyze the economic relationship between the development of B2B e-commerce in China and the influencing factors by regression. The empirical results show that logistics capital investment plays a significant positive role in promoting the development of B2B e-commerce in China. The scale of cross-border e-commerce transactions plays a positive role in promoting the development of B2B e-commerce. The website scale construction has the certain positive promotion function to the B2B e-commerce transaction growth. It can be seen that starting from logistics, foreign trade and network facilities construction in a certain proportion can provide a new direction for the development of B2B e-commerce.

1. Introduction

1.1 China's B2b e-commerce transaction scale has grown and its industry status has steadily improved

In recent years, China's B2B e-commerce transaction volume has grown steadily, becoming a new force driving the Internet economy. Since 2000, the scale of B2B e-commerce transactions in China has been on the rise, with the transaction volume surging from 130 billion yuan in 2000 to 2.73 trillion yuan in 2018. In just 19 years, the transaction volume has increased by nearly 210 times. It can be seen that the rapid development of B2B e-commerce transactions in China has significantly promoted the rapid economic growth of e-commerce, and the industry status has been gradually improved.

China B2B electric business turnover accounted for the proportion of gross domestic product (GDP) since 2000 in a steady rise trend, the proportion of rising from 1.31% in 2000 to 30.32% in 2018, a gain of close to 30 times, China B2B e-commerce growth rate faster, as China's electric business platform trading new pillar industry, effectively promoted the uplink Internet economy in our country, industry status is rising steadily.

1.2 The structure of e-commerce industry has been gradually improved

The development of B2B transactions in China is mainly supported by the three major factors of sale, cooperation and service, and mainly affected by the four factors of basic environment, capital, service and website itself [1], followed by the degree of information development, transaction openness, the scale of Internet users, Internet penetration rate and the scale of employees. In general, China's B2B e-commerce industry still lags behind commodity quality and after-sales service to a large extent, mainly focusing on the credit system. In recent years, in the Internet environment, although the industry vertical segmentation service is still in the initial stage, platform cooperation

and sharing [2], local characteristic industrial chain cluster, industry depth service has been gradually improved.

China B2B electricity trade the proportion of the total turnover of China's e-commerce industry basically stable, since 2000 to 2017 fell slightly, to 2018, and showed a trend of recovery and share from 92.86% in 2000 fell to 71.53% in 2017, and rose to 86.31% in 2018, suggests that the e-commerce industry's overall development level is higher, the industry as a whole structure optimized constantly.

1.3 The external development environment of B2b trading needs to be improved

Compared with the old e-commerce, B2B e-commerce is an emerging industry, and there is more room for improvement of relevant policies and regulations. In terms of management, the B2B e-commerce of our country is relatively backward, while the "e-commerce" much starker choices- and graver consequences- in "development plan" the "Internet + flow" action plan "network transaction management method" and so on a series of laws and regulations have been enacted for electricity trading, but some regulations and rules of global electricity there is a certain gap, there is great difficulty in the control statistics, in has not formed a set of perfect laws and regulations system, reasonable to the development of targeted policies more difficult.

2. Analysis on the influence mechanism of B2b transaction development

2.1 Cross-border e-commerce transaction volume

Cross-border e-commerce transaction volume reflects the scale of a country's (region's) participation in international trade through e-commerce platforms, as well as the level of transaction openness. After 2000, the scale of cross-border e-commerce transactions has further expanded, and the impact of talent flow, management experience and technical exchange is inevitable. The development of China's B2B e-commerce will be increasingly influenced by cross-border e-commerce trade [3], which is theoretically conducive to promoting the development of China's B2B industry.

2.2 Website scale

There is a mutual promotion between the website scale and B2B e-commerce transaction scale. Over the past ten years, China's website construction in the progress of science and technology, diverse functions, consumer market expansion and other external conditions under the promotion of rapid development, relatively also catalyzed the maturity of these conditions. The scale construction of the website has effectively promoted the development of B2B e-commerce transactions. Therefore, the number of websites is selected as the explanatory variable in the model, and it is expected that the number of websites is positively correlated with B2B e-commerce transaction volume [4].

2.3 Logistics capital input

Logistics capital input provides means and guarantee for the development of B2B e-commerce industry in China, and generates a demonstration effect of new trading methods. On the one hand, the logistics service effectively improves the transaction efficiency and quality, enhances the development of the credit system, and thus makes the B2B e-commerce system more mature and perfect. On the other hand, capital investment can ensure the vitality of the transportation industry, and develop innovative B2B trading products through technological innovation [5]. Therefore, the total cost of logistics is selected to present the situation of logistics service and industry investment, which is expected to be positively correlated with B2B e-commerce turnover.

3. Empirical analysis of influencing factors of B2b e-commerce transactions in China

3.1 Index selection and data

In this paper, the following variables are selected to analyze the influencing factors of B2B e-commerce transactions: the size of employees (X1), and the number of direct employees of e-commerce in China (unit: ten thousand); Cross-border e-commerce transaction scale (X2) is measured by China's cross-border e-commerce transaction volume (unit: 100 million yuan). The size of Internet users (X3) is measured by the number of Chinese Internet users (unit: 100 million). Internet penetration degree (X4), measured by Internet penetration rate (unit: %); Website size (X5) is measured by the number of websites (domain name registrars in China, excluding websites under.edu.CN). Logistics cost (X6) is measured by the total logistics cost (unit: trillion yuan).

This article are based on data from China's electronic information industry development research institute, China Internet network information center CNNIC, the ministry of industry and information technology, the general administration of customs, e-commerce trading technology national engineering laboratory, the central university of finance and China's Internet economy research institute estimates, China federation of logistics and purchasing, the national bureau of statistics, the Chinese e-commerce report the ministry of commerce, the China Internet network development state statistic report of past years and China statistical yearbook 2019, time span is 2000-2018.

Firstly, OLS estimation method was used for estimation, and it was concluded that the values of X6 and constant t statistics were not significant. Therefore, the logarithm of each variable was taken before regression.

The determination coefficient $R^2=0.9934$ indicates that the fitting degree is good, and the F statistic is 302.4483, indicating that it is significant, and the values of each t statistic are significant. However, the signs of LNX1, LNX2 and LNX4 are contrary to expectations, indicating that serious multicollinearity may exist. The multicollinearity test shows that there is a certain degree of multicollinearity.

The original values of each variable are gradually regressed, and the three variables X1, X3 and X4 are finally excluded.

3.2 Model establishment

Based on the data selected from the previous variables, the model is established as follows:

$$\text{LN}\hat{Y} = C + a_0\text{ln}X_2 + a_1\text{ln}X_5 + a_2\text{ln}X_6 + \varepsilon_t$$

Where Y is B2B transaction volume, C is a constant term, X_2 is cross-border e-commerce transaction volume, X_5 is the number of websites, X_6 is the total logistics costs, and t is the number of time series. First, OLS estimation method was used to estimate the model and preliminarily observe the relationship between variables.

Since the data used is the period number of time series, its stationarity needs to be tested, and the existence of co-integration relationship is examined by EG two-step method. The sequence of $\text{ln}X_2$, $\text{ln}X_5$, $\text{ln}X_6$, $\text{ln}Y$ and their difference sequences were tested by ADF, all of which were first-order single integrals. The estimation results of the stationarity test of residual sequence show that there is no unit root and the residual sequence is stationary, indicating the existence of cointegration relationship.

After doing the residuals, it can be found that the variation of the residuals has a system mode, and the continuous is positive and continuous is negative, indicating that the residuals have a first-order positive correlation. The BG test shows that there is autocorrelation.

3.3 Empirical results

In order to solve the autocorrelation problem, the Cochran - Orcutt iterative method is used for generalized difference regression.

At this time, $d_L=0.897, d_U=1.710, DW=1.7719$, indicating no autocorrelation. And the test, there is no heteroscedasticity. Then the estimated result of the model is

$$LN\hat{Y} = 5.2565 + 0.0548LN X_2 + 0.0238LN X_5 + 2.4151LN X_6$$

Where Y is B2B transaction volume, C is a constant term, X_2 is cross-border e-commerce transaction volume, X_5 is the number of websites, X_6 is the total logistics costs, and t is the number of time series.

In the estimation results of model parameters, the determination coefficient $R^2=0.9897$, the model fitting effect is good, the integrity is significant, the model is reasonable and can be applied. Cross-border e-commerce transactions have a significant impact on B2B transactions, which can promote the development of domestic B2B transactions. The size of the website on the growth of B2B transactions to promote a significant positive role, in line with expectations; However, logistics development has a significant positive impact on B2B transactions, and the two are positively correlated.

Table 1 Cochran - orcutt method estimation results

Dependent Variable: LNY				
Method: Least Squares				
Date: 06/09/19 Time: 22:37				
Sample (adjusted): 2001 2018				
Included observations: 18 after adjustments				
Convergence achieved after 25 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.039127	2.320989	2.171112	0.0507
LN X ₂	0.074870	0.330192	0.226748	0.8244
LN X ₅	-0.002664	0.043833	-0.060768	0.9525
LN X ₆	2.499698	0.661236	3.780342	0.0026
AR(1)	0.757871	0.224819	3.371027	0.0056
R-squared	0.989655	Mean dependent var		10.04855
Adjusted R-squared	0.986207	S.D. dependent var		1.643572
S.E. of regression	0.193027	Akaike info criterion		-0.212047
Sum squared resid	0.447112	Schwarz criterion		0.033016
Log likelihood	6.802398	Hannan-Quinn criter.		-0.187687
F-statistic	287.0028	Durbin-Watson stat		1.771875
Prob(F-statistic)	0.000000			
Inverted AR Roots	.76			

4. Conclusions and policy implications

4.1 Conclusions

Total logistics costs, cross-border e-commerce transaction volume and the number of websites play an important role in the development of China's B2B industry and are the driving force and foundation for the growth of China's B2B transactions. The improvement of logistics cost input, cross-border e-commerce scale and website scale is conducive to the expansion of B2B transaction scale, development platform and industry efficiency.

This paper, by using 2000-2018 China's B2B e-commerce related data, through the empirical analysis of cross-border business deals, website scale, the logistics cost and B2B electricity trading scale, the relationship between the get the following conclusions: First, logistics investment to

China's B2B e-commerce development has significant positive role in promoting, this is consistent with the expectations of this article. In the development process of B2B e-commerce in China, logistics cost input is a very important influencing factor, which is the basis of stable operation of the industry. The improvement of capital input related to logistics is conducive to the improvement of service quality [6], industry scale and profit space, and the steady development of B2B e-commerce in China. Second, the scale of cross-border e-commerce transactions has a positive and significant effect on the development of B2B e-commerce, effectively promoting the development of B2B e-commerce in China and broadening the domestic development prospects of the industry. With the increase of cross-border e-commerce transactions, domestic B2B e-commerce is also rapidly developing in such an environment, including the technical level, talent support, management experience and other factors are also constantly increasing. Thirdly, website scale construction has a positive impact on improving B2B e-commerce transactions [7]. The website itself is the basic environment for the development of B2B e-commerce, the original trading platform, and an important carrier of e-commerce transactions.

4.2 Policy implications

In the past two decades, B2B e-commerce transactions in China have grown rapidly, but there are also many influencing factors. China should optimize B2B e-commerce services, innovate and develop the logistics industry, consolidate the existing B2B trading advantages, explore new advantages of e-commerce trading, invest in place, and further expand the scale of B2B trading. Pay attention to the website construction, strengthen the platform control [8], according to the development of B2B transactions in China, improve the basic environment of B2B e-commerce; We should innovate the development mode of B2B transactions, improve the openness of transactions and the degree of information development, optimize and upgrade various industries, and promote the sustainable development of B2B e-commerce in China.

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