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Influencing Factors of Cross-Border E-Commerce in China's Exports to Asean

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Abstract
The research aims to analyze the impact of GDP, per capita income, total population, internet coverage, transportation costs, and economic freedom index on the size of cross-border e-commerce exports. This study uses quantitative research by obtaining data from the World Bank and Customs system and analyzing it using EViews12. There are six independent variables and one dependent variable. The technique used for the panel data multiple linear regression is the fixed effects model. In this paper, based on the data related to China's cross-border e-commerce exports to the ten ASEAN countries from 2013 to 2022, GDP, total population, per capita income, and transportation cost, Internet coverage and economic freedom index are selected as the six independent variables. The dependent variable is the scale of China's cross-border e-commerce exports to each country. The technique used for panel data multiple linear regression is fixed effect model, The technique used for panel data multiple linear regression is fixed effect model. It is concluded that GDP, total population, Internet coverage, and transportation cost have a significant impact on China's cross-border e-commerce exports to Indonesia, showing a strong significance.

Keywords: GDP, PNI, POP, DIG, TRC, EF, cross-border E-commerce

INTRODUCTION

China is the world's largest exporter as well as the second-largest importer. In recent years, during the third industrial revolution brought about by the Internet and mobile Internet, China's traditional social production methods have also entered a stage of transformation, in which enterprises have gradually transformed into China's traditional trading form. Cross-border e-commerce has gradually grown to become one of China's most important commercial types. In recent years, in the development of trade between China and ASEAN, the e-commerce turnover has steadily improved and trade growth has been realized. In the process of the development of the scale of economic trade between the two sides, various technical means have been rapidly improved, whether in big data or cloud computing has made great progress. China is an important partner in ASEAN's trade exchanges, in which it plays an important role, utilizing cross-border electronic platforms to export industry-related products to ASEAN, while ASEAN mainly sells daily necessities to China, as well as vegetable products, cosmetics and other trade exports. China and ASEAN provide each other with their different specialty commodities, enhancing effective trade exchanges and promoting friendly exchanges between China and ASEAN.

Some researchers have completed research on important factors affecting the export scale of cross-border e-commerce. One of them is GDP, which can represent the economic size of a country, and can also measure the country's demand capacity as an importing country and the level of national consumption (Giannetti et al, 2015). According to Retnosari& Jayadi (2020), the research results claim that GDP has a positive and significant impact on the export scale of cross-border e-commerce. The high GDP indicates that the region has better future prospects for cross-border e-commerce and more companies are willing to enter the market (Giuffrida, 2017).

Abdullahi et al 2022) points out that increases in per capita income (PIN) are not always accompanied by increases in export size. Facts have proved that per capita income has increased,

but the scale of exports has declined. This study is inversely related to the results of Lu (2021), which showed that income level significantly affects export size. Given the contrasts and peculiarities of cross-border e-commerce and traditional trade, e-commerce is more of a retail activity with more diverse consumer choices, which can break through traditional trade barriers to some extent (Liu et al, 2022).

According to Hidayah (2023), total population (POP) does not affect exports. However, the research results of He & Wang (2019) are that the total population affects the scale of cross-border e-commerce exports, so if the total population increases, the export scale will increase. This means that a region with a larger population is more suitable for the development of cross-border e-commerce.

The results of Lee & Kim (2018) show that the scale of cross-border e-commerce exports is affected by the number of Internet users. The availability and caliber of information regarding the goods and services sold, as well as the ability of vendors and buyers to access markets, may be impacted by internet connectivity (Hjort, 2022). The findings of this investigation concur with Lu (2021). With Internet usage growing year over year and the new crown pandemic acting as a stimulus, e-commerce has advanced even further in recent years, giving it a great market for Chinese enterprises looking to export their products there.

Transportation cost (TRC) is an important indicator to evaluate whether cross-border e-commerce can be developed. Transport costs are costs incurred internally by the shipping service provider. They have fixed and variable costs, depending on relevant conditions such as geography, infrastructure, administrative barriers, energy, and modes of passenger and freight transport (Rodrigue, 2020). Shabana & Mahmod (2022) research believes that the trend of transaction costs is consistent with the trend of export volume.

According to Han (2022), trade freedom is a measure of the scale of exports, and the greater the degree of trade freedom, the more interested investors are in conducting business activities compared to closed areas. Individuals in a free economy are free to work, create, consume, and invest as they see fit. In an economically free society, the government allows for the free flow of labor, capital, and goods while avoiding coercion or restrictions on freedom that go beyond what is necessary to secure and preserve freedom. Economic freedom has a direct impact on a country's trading environment, and in a favorable trade climate, import and export trade prospects improve (Dialga & Vallée, 2021).

The main markets for Chinese cross-border e-commerce companies in ASEAN are Thailand, Singapore, Malaysia, Indonesia, Cambodia and Vietnam. In 2020, these six countries will add 40 million new Internet users, the cumulative number of users will reach 400 million, and the total business turnover will reach US$62 billion, an increase of 11%. In addition to these six countries, ASEAN's population of nearly 700 million and the rapidly growing digital economy make e-commerce the biggest highlight of ASEAN's economic development. It is estimated that by 2025, ASEAN's e-commerce transaction volume will reach a total of 172 billion US dollars, with a compound annual growth rate of 23. %. This study aims to determine the impact of China on the scale of cross-border e-commerce exports to ASEAN. On the basis of summarizing the cross-border e-commerce research, the variables are identified as GDP, per capita income, total population, Internet coverage, transaction distance, and economic freedom index.

RESEARCH METHOD

Population and size

The population is total number whose characteristics are in accordance with the subject or object of the researcher so that the researcher can classify the subject or object to be determined for the continuity of the conclusion (Sugiyono, 2017). The sample size shouldn't be either too big

or too little. It should be at its best. To improve the effectiveness and reliability of the sample, the researcher established a number of criteria for its size.

The following criteria or qualities were used to determine the study's sample size is joined ASEAN, close economic ties with China, e-commerce has grown significantly in recent years.

Data Analysis Method

Descriptive statistical analysis

Descriptive analysis is used to identify the study's sample characteristics, including the mean, standard deviation, maximum value, and minimum value.

Panel Data Regression Model

Panel data and three kinds of regression models are used in this study: common effect, fixed effect, and random effect. The best model selection test was utilized in this study to choose the most appropriate panel data regression model for testing the research models' hypotheses. The researcher uses EViews 12 software to determine which model is the best of the three.

Chow Test

Chow test is used to assess whether a common or fixed-effect model should be utilized. Fixed-effect model is used if the cross section and Chi-Square probabilities are less than 0.05. If cross-sectional and Chi-Square probabilities are larger than 0.05 the model represents is common effect.

Hausman Test

This test contrasts fixed effect models with random effect models as a panel data regression model. If the random cross section's probability (p-value) is less than 0.05, fixed effect model is selected. Meanwhile, If the probability value (p-value) of the random cross-section is higher than 0.05, the random effect model is selected.

Multiple Regression Analysis

In a multiple linear regression analysis, one dependent variable is combined with two independent variables. Multiple regression analysis is a statistical approach for investigating and modeling connections between variables. Multiple regression is frequently used to solve the regression analysis problem that results in a relationship between two or more independent variables (Sugiyono, 2017). Consider the following example of a multiple linear regression equation models:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Where:
Y = Cross-border e-commerce export scale
$\beta 0$ = constant
$\beta 1 - \beta 6$ = regression coefficients
$X1$= GDP
$X2$= Per capita national income
$X3$= Total population
$X4$= Internet coverage
$X5$= Transaction cost
$X6$= Economic Freedom Index

ε = Random Error

Hypothesis Testing

T-Test

Ghozali (2016), state that all independent variables remain constant, the t-test statistic demonstrates how independent variables influence the dependent variable. The T-test is used to identify if each independent variable. There is a significant value of 0.05 in this test. A hypothesis to be accepted, it must reach the 0.05 significance level regarding the probability value of the error rate t or the p-value.

According to Ghozali (2016) all model independent variables are tested using the statistical F-test to see if they all affect the dependent variable simultaneously. The F-statistics and probability F-statistics may be used to decide the outcome of this hypothesis. If the value of probability F-statistic < 0.05 then the independent variable simultaneously affects the dependent variable. If the value of probability F-statistic > 0.05 then the independent variable simultaneously has no effect on the dependent variable.

Coefficient of Determination (Adjusted R2)

According to Sriyana (2014), The coefficient of determination indicates data's ability to be described by a regression line. The determination coefficient of determination R2 demonstrates that the measure of the model's ability can explain dependent variables.

RESULTS AND DISCUSSIONS

Multiple regression analysis

In the selection of the estimation method in the previous section, as can be shown, the random effect model is the most accurate approach of estimate used in this research.

T-Test

Test results may be utilized to describe the effect of the independent variable on the dependent variable. The following result of the T-test that have been utilized in this studyis the probability value of GDP is less than 0.05 (0.0016<0.05), indicating that each GDP has a significant impact on the export scale of cross-border e-commerce. The probability value of per capita income (PIN) is greater than 0.05 (0.0658> 0.05), indicating that PIN has no significant impact on the scale of cross-border e-commerce exports. The probability value of the total population (POP) is less than 0.05 (0.0015<0.05), indicating that POP has a significant impact on the scale of cross-border e-commerce exports.The probability value of Internet coverage (DIG) is less than 0.05 (0.0000 < 0.05), indicating that DIG has a significant impact on the scale of cross-border e-commerce exports. The probability value of the transport cost（TRC） is less than 0.05 (0.0001 < 0.05), indicating that TRC has a significant impact on the scale of cross-border e-commerce exports. The economic freedom index (EF) probability value is less than 0.05 (0.8644>0.05), indicating that EF has no significant impact on the export scale of cross-border e-commerce.

Table 1. Multiple Regression Analysis Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	823.4298	135.0749	6.096025	0.0002
GDP	0.016843	0.033944	0.496226	0.0016
PIN	0.001613	0.000771	2.093215	0.0658
POP	0.119031	0.026523	4.487758	0.0015
DIG	485.6417	49.73634	9.764323	0.0000
TRC	-0.002341	0.050960	-0.045931	0.0001
EF	0.420317	2.392470	0.175684	0.8644

Source: Proceed Data by EViews 12

F-Test

According to the study performed using EViews 12, the calculation F-statistic value is 19.11652 with a probability F of 0.000000 < 0.05. F is considered significant if its probability value is less than 0.05, which means that all independent variables have an impact on the dependent variable simultaneously.

Coefficient of Determination (Adjusted R2)

According to Nisa (2018), the determination value of adjusted R2 is weak because it may be biased by the number of independent variables included in the model. The result of R2 has an adjusted value of 0.732972. Thus, the independent variable's capacity to explain the dependent variable is 73.2972% the remaining 26.7028% is factored out of the model's explanation

CONCLUSION

This research aims to determine the factors influencing the value of China's cross-border e-commerce exports to ASEAN from 2013 to 2022. It can be concluded that This research uses EViews to analyze the determinant factors in predicting stock prices and to demonstrate the hypothesis that the researcher proposed before. The results of this study can be summarized as follows: GDP, total population, Internet coverage, and transaction costs have a significant positive impact on the scale of China's cross-border e-commerce exports to ASEAN. The research shows that the information obtained from the research results is expected to be used to make choices and implement whether to start a cross-border e-commerce business. Depending on the level of data specific to each region, investors can better assess. The study suggests that investors should pay close attention to indicators such as internet coverage and population as these can affect the size of exports. Therefore, further research can add or change independent variables in the model to obtain more detailed research results that affect the scale of cross-border e-commerce exports. This study shows that the information obtained from the research results is expected to be used as factors in making choices and implementation whether to conduct cross-border e-commerce. Investors should evaluate fundamental analyses to grasp the potential of the ASEAN cross-border e-commerce market, as well as the market size, purchasing power, and policy culture. In light of the rapid development of cross-border e-commerce, emphasize the training of cross-border e-commerce talents who are familiar with regional nation expertise. When selecting logistics methods, investors should consider the characteristics of the products they sell, as well as logistics costs and transportation timelines, to choose between air, sea and land transportation and a combination of all three, so as to improve the speed of product transfer and enhance the competitiveness of products in the local market.

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