# How does Chinese Tea Go to the World?- Internationalization Strategy Based on OLS Model

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**ABSTRACT:** Chinese tea is popular overseas with a long history. Chinese tea is complete in variety and good in flavor. However, Chinese tea enterprises are generally small in scale, backward in management, old in marketing and lack of brand influence. Based on an empirical research on Chinese tea enterprises, and the panel data from the year 2004 to 2019, this paper constructs an OLS natural logarithm model, and finds that the Internet Population Penetration Rate and China Express Development Index positively affect China's tea export. This finding is valuable to Chinese tea export and may also offer enlightenment to other countries' international trade. Accordingly, to improve the international competitiveness of Chinese tea and to boost Chinese tea trade, the internationalization strategy of Chinese tea is proposed, including Internationalization Strategy at the company level, Differentiation Strategy at the business level, Cross-border E-commerce strategy, Brand Internationalization, and Supply Chain Optimization Strategy.

Keywords: internationalization strategy, tea, cross-border E-commerce, international trade, OLS model

# INTRODUCTION

With a history of nearly 2000 years, China is the hometown of the tea. Ancient Silk Road, Tea Horse Road spread tea all over the world. Ranked as the first of the world's top three drinks, tea has been loved by people all over the world since ancient times. 1 Under the background of "One Belt and One Road", the rising Cross-border E-commerce is changing the traditional management mode of enterprises, which deeply affects the layout of China's foreign trade industry chain, and brings new opportunities for Chinese enterprises to open up international markets. As the sole country cultivating a complete tea variety, including green tea, black tea, oolong, dark green tea, white tea and yellow tea, China is a big tea county, with a large tea yield and a stable tea production structure. In the year of 2018, China's tea production reached 2.61 million tons, ranking first in the world, accounting for 45% of the global output. China's tea industry output has maintained a decade of continuous growth, while it is still a prominent problem that tea output is greater than sales. Moreover, Chinese tea enterprises are generally small in scale, backward in management, old in marketing, lack of brand influence and lack of innovation ability. At present, it is urgent to study and analyze the market characteristics of Chinese tea and apply international strategy to enhance the international market share and sales volume of Chinese tea. In the environment of slow growth of traditional international trade, Chinese tea enterprises should conform to the trend of the times, adopt the international strategy adapting to the current situation, and change the traditional business model. 2

## I. Current Situation of China's Tea Trade

There are now more than 160 tea consumer countries around the world, in which about 3 billion people drinking tea 1. In terms of export trade, China's tea exports grew steadily (See Figure 1). China's tea export volume was 301,484 tons in 2014, 364,742 tons in 2018, and then rise to 366,552 tons in 2019. With the growth of China's tea export volume, China's total tea export value reached a new high. China's tea export value were only \$1.27 billion in 2014, and reached \$1.38 billion in 2015, while China's total tea exports reached \$1.78 billion by 2018, and exceeded \$2 billion by 2019. It is notable that the export volume of Chinese tea is increasing year by year, but the increase is not large; while the export value of Chinese tea is rising year after year, and the increase is relatively high. The reason for this phenomenon is that in addition to inflation and exchange rates, China's tea prices and quality have advantages in the global market, which will further affect the changes in exports.

The breakdown of Chinese tea exports (Figure 2) shows that at present, green tea enjoys the highest export, followed by black tea, oolong tea and Pu'er tea. China's green tea export reached 303,900 tons in 2019, up 0.3% from 2018, accounting for 82.8 % of total tea exports; the export volume of black tea is 35,200 tons, up 6.6% from the same period last year, accounting for 9.6 percent; the export volume of Oolong tea reached of 18,100 tons, down 4.3% from the same period last year, accounting for 5% of the total export volume. In 2018, Except for Pu'er tea, exports of the rest of the tea category have increased slightly; 2019, Except for a slight drop in scented tea exports, the rest of the tea exports have risen. In 2018, green tea, black tea and oolong tea exported \$1.223 billion, \$281 million and \$180 million, respectively. In 2019, Green tea, black tea and oolong tea exported \$1.318 billion, \$349 million and \$236 million respectively. But overall, China's tea export market is dominated by green tea, accounting for more than 80%, which market is mainly low-end, but in stable export situation. Due to the effective structural adjustment of black tea exports and the growth of export volume of ASEAN ten countries and countries along the "One Belt and One Road" as an emerging market, the increase of black tea exports has been effectively driven. After a phased reduction in 2018, a recovery growth was achieved in 2019. At present, the main consumption of tea in the international market is black tea. However,

Chinese black tea, whether in quality, international market share, or brand awareness, is far less than India, Kenya or Sri Lanka. There is still room for development. The year 2019 witnessed a slowing increase of Oolong tea export value, due to a decrease of Oolong export volume. The increase in Oolong tea exports is caused by the rise in export prices.

Among the main Chinese tea export countries or regions (see Figure 3), Morocco was the country with the highest tea export sales in 2019, followed by Uzbekistan, Hong Kong, Ghana, Senegal, the United States ranked eighth, and Russia ranked 10th. In 2018, Hong Kong was the country with the highest exports, followed by Morocco, Vietnam, the United States fourth and Malaysia fifth.

In terms of marketing mode, under the environment of rising trade protectionism and slow growth of traditional international trade, especially under the impact of the Coronavirus epidemic, the gradual rise of cross-border e-commerce is changing the management mode of traditional enterprises, more deeply affecting our country foreign trade industry chain layout. More and more enterprises engaged in cross-border e-commerce marketing activities will push Chinese tea to the world. Through the data analysis of the cross-border e-commerce platform data, it can be seen that tea belongs to the hot goods in the food industry, tea competition is fierce for the supply and demand index is over 200%, and tea belongs to the Red Sea industry. The number of tea visitors and page views in the higher category, that is, in the proportion of food category is about 60%, but tea contributes 90% turnover of the higher category, which indicates that the price of per customer transaction is relatively high. Nearly 50% of the tea payment comes from Russia, while the payment from United States, and the United Kingdom are relatively small, indicating that the main market for tea cross-border e-commerce in Russia, the United States and the United Kingdom market needs to be further developed. 2

## II. China Tea Export OLS Model and Inspection

Traditional international trade theories, whether it's Mercantilism, Factor Endowment Theory, or Comparative Advantage theory, are actually without exception an analysis of the factors that promote international trade. Freesia, Weinhold (2002), Bojnec, And Ferto (2009) prove that the development of the Internet has a positive role in promoting exports 5. The effect of Internet development on international trade can be summarized as follows: 1. Trade Creation Effect; 2. Market Expansion Effect; 3. Cost Reduction Effect. 6 High level of Internet development, makes it easy for overseas buyers to access seller information via the Internet, easy to establish international trade links, creating new trading opportunities, and even facilitating procurement directly through cross-border e-commerce platform. The Internet is convenient for countries that have never traded to establish business relations; it can obtain wider information about products and buyers and facilitate procurement from countries or regions with better quality and cheaper prices, thus achieving the effect of market expansion. Internet procurement can save middlemen, which improves transaction efficiency through email, reduces trade costs, and Lowers transaction costs.

On the basis of their research, this paper puts forward that the development of express delivery industry also plays a positive role in promoting Chinese tea export. In recent years, the development of cross-border e-commerce has led to the development of express delivery industry, while the rapid development of express delivery industry and the improvement of its service level have in turn promoted the development of cross-border e-commerce. Cross-border logistics costs are high, often accounting for 20-50% of the total cost; cross-border logistics cycle is long, which hinders customer shopping experience. Different from the bulk cargo transport of sea containers, Cross-border e-commerce logistics tend to be in relatively small-volume, relatively light-weight international express delivery. Therefore, it can be inferred that the express delivery industry has an impact on Chinese tea exports.

Therefore, this paper uses Internet Penetration to represent the development of the Internet, and uses the Express Development Index to represent the development of the express delivery industry. The following theoretical models are obtained:

Exports= F (I,E, Controlvariables) (1)

In formula (1), "Exports" represents Chinese Tea Exports, "I" represents Chinese Internet Penetration (Internet Population Penetration), "E" represents China Express Development Index (Express Development Index), and Controlvariables represents important control variables that may affect Chinese tea exports, such as economic scale, trade openness, foreign investment, etc.

According to the above theoretical model, this paper takes China's tea export from 2014 to 2019, China Express development index, China's Internet penetration, and China's Cross-border E-commerce Industry Penetration (Table 1) as samples, establishes time series and panel data, and uses eviews10 software to investigate the impact of Internet and express development on China's tea export. The data was processed via Eviews 10, and it was found that: after taking the natural logarithm of China's tea export, China's cross-border e-commerce industry penetration and China Express development index, the linear trend is basically the same (Fig. 4). China's Cross-border E-commerce Industry Penetration represents all tea companies, Percentage of tea companies using cross-border e-commerce platforms for business sales. Therefore, it is speculated that there is a positive correlation between China's tea export value and China's Internet penetration rate and China's express delivery development index. Internet penetration represents the extent to which interconnection permeates the lives of ordinary people, It refers to the ratio of Internet users to the total population. China Express Development Index China Express Development Index, CEDI) is based on the basic characteristics of the development of Chinese express, Quantitative evaluation of the development of Chinese express delivery in a certain period, Based on 2010, The base period index is set at 100. China express development index includes four aspects: development scale, service quality, development popularization and development trend, a total of 11 indicators, The data are from the National Post Office and the National Bureau of Statistics. 7 On the basis of the preliminary theoretical model, the following models were developed:

Ln (Exports) = 
$$\alpha$$
 Ln (E) + $\beta$  Ln (I) +C+ $\mu$  (2)

In formula (2), Exports represents China's Tea Exports, "E" represents China's Express Development Index, "I" represents China's Internet Population Penetration, and "C" represents the intercept term, that is, the part that cannot be explained by express delivery and Internet influencing factors, and "\u03c4" represents the error term.

Table 1 China's Tea Export Value, Express Development Index, Cross-border E-Commerce Industry Penetration and Internet

The mathematical model (2) is substituted into time series and panel data, and OLS regression analysis is conducted by using Eviews 10 software. The standard results of OLS model estimation of tea export volume are as follows (Table 2). It can be found that the intercept p value is 0.59, far away from the 5% level, indicating that the intercept is meaningless, not significant, and should be deleted. On the basis of model (2), the model (3), namely OLS model of Chinese tea export, is obtained by removing intercept term C.

Ln (Exports) = 
$$\alpha$$
 Ln (E) + $\beta$  Ln (I) + $\mu$  (3)

In equation (3), Exports represents China's Tea Exports, "E" represents China's Express Development Index, "I" represents China's Internet Population Penetration, and " $\mu$ " represents the error term. Eviews10 was also used to test, and the statistical results are shown in Table 3. Comparing Table 2 and table 3, it can be seen that after removing intercept term, the R square has little change, and the adjusted R square has increased by one percentage point to 0.96, which proves that the fitting degree of the optimization model is very good. According to the correlation of the residual series, the DW value decreased from 1.79 to 1.3, which was less than the standard value of 2. After optimization, the probability of express development index (E) is 0.0001, and the probability of China's Internet penetration (I) is 0.0009, which are far less than the significance level of 5%, indicating that the regression coefficient of the model is very significant.

During the sample period, if the express development index increases by one percentage point, the export value of tea will increase by 0.162%; if the Internet penetration rate of China increases by one percentage point, the export value of tea will increase by 0.944%. After that, the residuals were tested by Q test and then by residual square autocorrelation test, as shown in Table 4 and table 5. As shown in table 4, all P values of residual Q test results are greater than 0.05, which can not reject the original hypothesis and prove that there is no autocorrelation in time series. It can be seen from table 5 that the autocorrelation test for the square of residuals shows that the p value is greater than 5%, which proves that there is no sequential correlation in the model

The above time series and panel data analysis proved that the OLS model (model 3) of tea export has good fitting degree and credibility. Therefore, the OLS model coefficients  $\alpha = 0.162$ ,  $\beta = 0.944$ , thus Export OLS model were deduced as follows.

Ln (Tea Exports) = 0.162 Ln (Express Development Index) +0.944 Ln (Internet Population Penetration)  $+\mu$  (4)

#### III. Suggestions on Internationalization Strategy

From the empirical study, the following conclusions can be safely drawn: the expansion of China's tea export can be achieved through two channels. The one channel is to enhance the Internet information construction, especially the Internet infrastructure construction in rural areas, by deepening the Internet penetration. On the one hand, speed up the construction of 5G, covering the last "one kilometer", improving the speed of Internet and reducing the charge of Internet. On the other hand, improve the utilization rate of Internet, encouraging tea enterprises or dealers to utilize cross-border e-commerce platform for sales. The government can take encouraging measures to vigorously develop the cross-border e-commerce industry, provide cross-border e-commerce training for tea enterprises, encourage colleges and universities to establish cross-border e-commerce specialty, and cultivate cross-border e-commerce practical talents. The other channel is to increase China Express Development Index. Through optimizing the speed of express delivery, service quality, development and popularization, development scale and other aspects to realize the optimization of tea supply chain.

Enterprise Internationalization Strategy is the development strategy of enterprise products and services outside its domestic country. Based on the analysis of the research results, this paper puts forward the internationalization strategy of Chinese tea, which can be used as a reference for tea enterprises.

## 1. Transnational Strategy

First of all, the transnational strategy should be adopted at the company level. The transnational strategy has the advantages of both Multinational Localization Strategy and Globalization Strategy, that is, it pays attention to the local market demand, process the efficiency of globalization, and can also form the experience curve and achieve economies of scale. According to the Chinese tea multinational strategy, the company's headquarter is located in China, while it is engaged in business in many countries; the strategic and operational decision-making power lies in the headquarter, and the headquarter guide its subsidiaries. Adopting the transnational strategy, China's headquarters will make decisions, provide differentiated tea products according to the situation of different countries, and expand the international market share through traditional foreign trade export, cross-border e-commerce export, or through joining franchising, strategic alliance, acquisition, and new wholly-owned subsidiary, etc. For example, in countries where tea customers are concentrated, such as Morocco, the United States and Russia, it is proposed to set

up subsidiaries, such as operating flagship stores of Chinese tea farms, and design local teahouses according to the styles of different countries, so as to improve the popularity of Chinese tea. It will be beneficial to join in a strategic alliance or acquire foreign companies to enjoy import tax relief or avoid trade barriers.

It is not advisable to adopt the Globalization Strategy, which is highly centralized, and the degree of sales standardization is high. Since different country has different cultural customs, different lifestyles, and different tea drinking habits and tastes, if the same tea product is provided, it can not cater for all customers. Therefore Globalization Strategy is not suitable for Chinese tea enterprises.

It is not wise to adopt the multinational strategy either. The multinational strategy is highly decentralized and establishes subsidiaries in various countries, while each subsidiary only does its own work, but it can provide differentiated products or personalized products according to the needs of various countries. However, it is impossible to obtain curve test benefit and location benefit, because Chinese tea enterprises are mostly small and medium-sized enterprises, and the risks is high both from the unpredictable international environment, and from the capital investment for business operation in various countries.3

### 2. Differentiation Strategy

Second, it is suggested to implement differentiation strategy at the business level. Since different countries have different cultures, customs and different tastes, it is difficult to cater for all tastes with the same product, thus we cannot adopt the minimum cost strategy. Therefore, it is necessary to adopt the differentiation strategy. For example, even if the tea varieties and grades are the same, the packaging differentiation strategy can still be adopted, such as providing the packaging with national style or integrating the popular elements of the target sales country. Choice preference of tea products packaging is tin, box, vacuum packaging and gift box packaging in turn. 2 It is recommended to provide packages of different weight, such as small cans of tea, or gift packages suitable for women or men, as well as various gift boxes. Chinese tea enterprises can develop new tea products and new tastes, such as all kinds of flower tea, fruit black tea, such as rose black tea, jasmine green tea, lemon green tea, fruit tea series combining green tea and yellow peach. Chinese tea enterprises can also develop a variety of functional tea, such as lotus leaf weight loss tea, chrysanthemum antihypertensive tea, hawthorn digestant tea, herbal tea and so on. There is a large demand in Europe and the United States. Ireland and the United Kingdom are the countries with the largest consumption of black tea in the world. Therefore, Chinese tea enterprises can focus on developing the European and American markets to sell black tea. It is suggested that the country should establish a special research institute for EU pesticide residue detection projects and standards to improve tea processing technology and reduce pesticide residues in Chinese black tea, so as to meet EU export standards.

## 3. Cross-border E-commerce Strategy

Third, China should vigorously develop the Cross-border E-commerce Strategy, especially expanding markets in Europe, America and the Asia Pacific. At present, China's tea exports to Europe and the United States have a small market share, while the world's tea imports are mainly located in Europe and the United States. At the same time, Europe and the United States are the most developed regions of cross-border e-commerce in the world, occupying 35% of the global scale of cross-border e-commerce. The Asia Pacific region has the fastest development of cross-border e-commerce and is also the third largest cross-border e-commerce market. 4 Cross border e-commerce platforms are mainly for small and medium-sized enterprises. B2B foreign trade platforms mainly include Alibaba (International Station), made in China, Dunhuang, China chemical, etc. B2C platforms, namely cross-border e-commerce retail platforms, include Ali-express, Light in the Box, Shopee, Wish, DX, etc. Overseas cross-border e-commerce platforms include Amazon and eBay. With the improvement of global Internet penetration, cross-border online payment, international packet logistics and other services, these cross-border e-commerce platforms are also developing rapidly. 4

As an Internet-based operation mode, cross-border e-commerce is reshaping the international trade chain of small and medium-sized enterprises. Cross-border e-commerce has broken the monopoly of foreign channels such as importers, wholesalers, distributors and even retailers under the traditional foreign trade mode, so that enterprises can face individual wholesalers, retailers and even direct consumers directly, effectively reducing the cost of trade intermediate links and commodity circulation. The cost of intermediate links can improve the profitability of enterprises and benefit consumers. Different from the offline way of brand area coverage of traditional tea foreign trade, cross-border e-commerce export enables tea enterprises to face consumers directly. By using data analysis tools, tea enterprises can timely obtain the international market demand information of tea products, understand the consumption habits of various consumption regions and customers, and flexibly adjust marketing strategies.

### 4. Brand Strategy

Fourth, it is proposed to apply the brand strategy. Use social media such as Facebook, Twitter, Google plus, LinkedIn,

Pinterest Tumblr, Instagram, VK to promote the Chinese tea brand image. Set up experience stores overseas to enhance customer experience and establish brand image. Promote brand image through sponsorship or advertising of some international events or events. At the same time, accelerate the implementation of tea standardization. The Bureau of Commerce and the Tea Business Association work together to promote the standardization of tea, develop tea cultivation techniques, and reduce the content of pesticide residues in tea.

# 5. Supply Chain Optimization Strategy

Fifth, the minimum cost optimization can be obtained by optimizing the supply chain. On the one hand, block chain technology can be used to optimize tea supply chain. If the origin or origin of tea is established, customers only need mobile phone scanning QR code to find the origin or source of tea, as well as manufacturer and dealer information. The block chain can also record the date of tea leaving the factory, the date of export declaration and a series of transnational logistics information, inspection and quarantine information from the manufacturer to the customer, so as to facilitate the tracking of goods and traceability, and to avoid false delivery and counterfeit goods. Tea block chain logistics alliance can also be established. With the help of GPRS positioning system, WMS lean logistics management system, Tea block chain logistics will optimize tea supply chain, attract domestic and overseas logistics enterprises through scale effect, improve logistics speed and logistics service quality, and reduce logistics costs. Through big data, the return cargo can be integrated. The returning ships, trains, cars will no longer be empty, but will carry back goods, thus the return logistics of return goods will be optimized.

On the other hand, overseas warehouses can be established in countries with high sales volume. If there is a subsidiary, it can directly buy land to establish its own warehouse. Chinese tea enterprises can also set up a border warehouse, for example, a Sino Russian border warehouse in Harbin, so as to obtain the minimum logistics cost and shorter logistics time. Chinese logistics companies can cooperate with foreign logistics companies or acquire foreign logistics companies to improve the speed of international logistics.

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Table 1.Tea Export Value, Express Development Index, China's Cross-boader E-commerce Industry Penetration Rate & Internet Population Penetration Rate

(Data Collected from From China Customs, China Post and China Bureau of Statistics )

Year	Tea Export Value (in Billion USD)	Express Development Index	China's Cross-border E-commerce Industry Penetration Rate	Internet Population Penetration Rate		
2014	1. 27	277. 4	15. 90%	47. 90%		
2015	1.38	382. 1	22%	50. 30%		
2016	1.49	539. 5	27. 50%	53. 20%		
2017	1.61	659. 1	29%	55. 80%		
2018	1.78	814. 5	29. 50%	59. 60%		
2019	2.02	998. 3	33. 29%	61. 20%		

Table 2. Regression Statistical Results of Model (2)

Variable	Coefficient	Std. Error	Prob.	
C E I	1.522466 -0.000536 1.754848	2.563165 0.5939 0.274140 -0.0019 1.370829 1.280		0.5943 0.9986 0.2905
R-squared Adjusted R-squared S.E. of regression Sum squared resid Log likelihood F-statistic Prob(F-statistic)	0.972233 0.953722 0.036538 0.004005 13.42227 52.52083 0.004627	Mean depende S.D. depende Akaike info cr Schwarz crite Hannan-Quin Durbin-Watso	ent var iterion rion in criter.	0.452637 0.169845 -3.474090 -3.578210 -3.890892 1.785665

Table 3. OLS Model Regression Statistical Results of China's Tea Exports

		<u> </u>		
Variable	Coefficient	Std. Error	Prob.	
E I	0.162161 0.943523	0.010278 0.106167	15.77787 8.887135	0.0001 0.0009
R-squared Adjusted R-squared S.E. of regression Sum squared resid Log likelihood Durbin-Watson stat	0.968967 0.961209 0.033452 0.004476 13.08871 1.332344	Mean depend S.D. depende Akaike info cri Schwarz crite Hannan-Quin	nt var iterion rion	0.452637 0.169845 -3.696237 -3.765650 -3.974105

Table 4. Residual Q Test

Autocorrelation			Partial Correlation				AC	PAC	Q-Stat	Prob
1 1 1 1		1 1 1 1	1 1 1 1		1 1 1	2 3 4	-0.307 -0.291 0.298	-0.345 -0.489 -0.059	0.2719 1.4018 2.7548 4.8921 4.9427	0.496 0.431 0.299

Table 5. Residual Square Q Test

Autocorrelat	ion	Partial Correlation				AC	PAC	Q-Stat	Prob
		 			2 3 4	0.025 -0.245 -0.088	0.002 -0.255 -0.013	0.2252 0.2327 1.1908 1.3758 7.1087	0.890 0.755 0.848

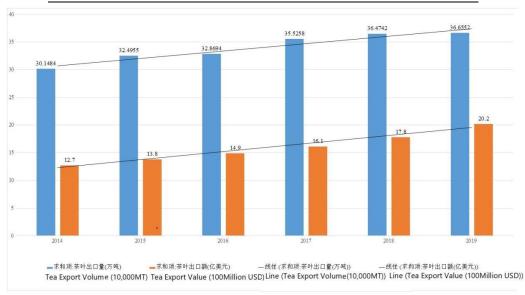


Fig.1. Trends in Chinese Tea Exports Volume and Exports Value (from China Customs Data Collection)

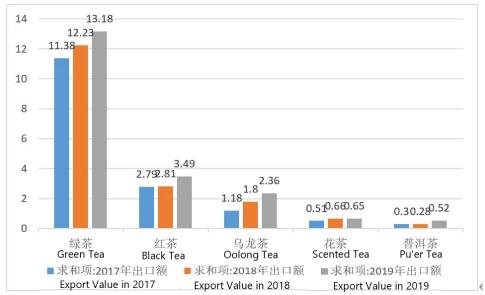


Fig. 2. Trend Chart of China's Tea Exports (US \$100 million)(from China Customs Data Collection)

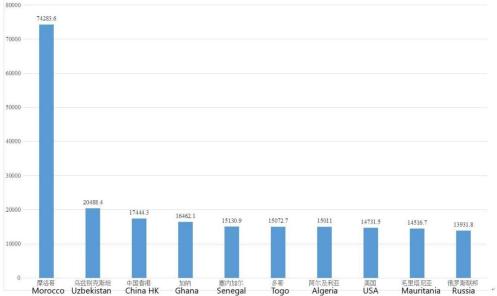


Fig. 3. China's Main Export Countries/Regions (in Metric Tons)(from China Customs data collation)

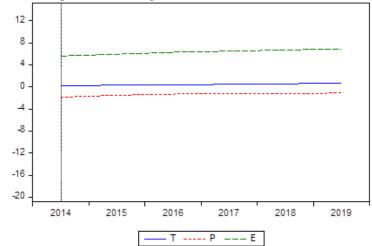


Fig.4. Natural Logarithm Trend of China's Tea Exports, Cross-boarder E-commerce Industry Penetration Rate and Express Development Index(T = ln (Tea Exports); P = ln (China's Cross-boarder E-commerce Industry Penetration Rate); E = ln (Express Development Index)