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The Promotion Effect of the Belt and Road Initiative on China's Tea Export Trade

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Abstract: Since the Belt and Road Initiative was put forward, countries that have signed cooperation agreements with China have become important partners of China's export trade. As a significant commodity in China's foreign trade, tea has ushered in a new development opportunity. This paper selects the data from the UN Comtrade database on China's tea export trade to 20 countries from 2008 to 2020 and uses the difference-in-differences model to study the promotion effect of the Belt and Road Initiative on China's tea export trade. The results show that the Belt and Road Initiative has significantly promoted China's tea export trade to Belt and Road member countries. Therefore, we should seize the opportunities brought by the Belt and Road Initiative for tea trade, promote cross-border e-commerce to develop tea trade, strengthen the quality control of tea export, and further promote international trade cooperation and development.

1. Introduction

In September and October 2013, Chinese government put forwards the major initiative of building the Silk Road Economic Belt and the 21st-Century Maritime Silk Road, namely, the Belt and Road Initiative, which aims to promote the economic growth of countries along the belt and carry out in-depth regional cooperation. As of November 2020, China had signed 201 cooperation documents for the joint construction of the Belt and Road with 138 countries and 31 international organizations. Unimpeded trade among member states is at the heart of the Belt and Road Initiative. According to the Belt and Road Construction and Development Report (2019), countries along the Belt and Road will become China's cooperative partners in various aspects of trade development in the future. Since the initiative was put forwards, China's trade with countries along the Belt and Road has maintained an overall growth trend and achieved remarkable results.[1] China is the birthplace of tea and the world's largest producer and exporter of tea. Its tea has been an important trade commodity between China and members of the Belt and Road Initiative since ancient times. The launch of the Belt and Road Initiative has ushered in development opportunities for tea trade. According to the UN Comtrade(comtrade.un.org), within five years after the initiative was put forwards, China's tea export volume increased from $1.273 billion to $1.785 billion. This growth shows the importance of the Belt and Road initiative to China's tea export trade.

2. Literature Review and Theoretical Basis

2.1 Literature Review

Since the Belt and Road Initiative was proposed, research on China's tea trade has attracted much attention. Scholars believe that the Belt and Road Initiative is a strategic opportunity for the development and expansion of China's tea industry and a major channel for Chinese tea to go global. From the perspective of tea market opportunities, the tea export trade market potential along the Belt and Road is huge, but the trade potential varies significantly among different trading countries. Factors such as the population, economic scale and trade barriers of trading countries have a significant influence on China's tea export.[2] From the various analyses of the current situation of the tea export market, although China's foreign trade in tea has maintained a high surplus for a long time,[3] there is still much room for improvement in tea export to Belt and Road member countries,[4] and problems such as limited market competitiveness still exist.[5] From the empirical point of view of tea export trade, current analysis methods mainly focus on the use of the gravity model of trade. Li Xiao et al. [6] empirically analyzed the influencing factors of China's tea export trade to countries and regions along the route under the background of the Belt and Road, and the results showed that transportation costs had the most significant impact on export trade volume. Huo Shangyi et al. [7] used this model to analyze the influencing factors of China's tea exports from 1991 to 2007 and proposed measures to expand China's tea exports by establishing international standards, and optimizing the market structure.

In general, the existing literature on the Belt and Road Initiative covers a wide range of research along several levels, but there are some problems, such as unitary methods and insufficient systematic normative research. Research on China's international tea trade in the context of the Belt and Road initiative mainly focuses on trade growth, market opportunities and the status quo. Most of them are limited to the overall analysis of the growth of tea export trade, and a lack of comparative analysis before and after the Belt and Road initiative is observed. Therefore, this paper makes a comparative analysis of China's tea export trade volume before and after the Belt and Road Initiative and examines the trade promotion effect of the Belt and Road Initiative through the tea trade between China and countries along the routes. Combined with the situation of various countries, this paper empirically studies the promotion effect of the Belt and Road Initiative on China's tea export trade, uses the difference-in-differences (DID) model to verify the policy impact of the Belt and Road Initiative.

2.2 Theoretical Basis

The Belt and Road Initiative is an important political and economic initiative that further enhances the level of China's opening-up. Due to the involvement of many countries and regions, the levels and fields of its impact are also different. In terms of the political intention to strengthen cooperation with countries along the Belt and Road, the proposal of this initiative will reduce the political pressure on tea trade between China and countries along the Road. Meanwhile, a more open economic and trade pattern will also promote the trade between China and countries along the Belt and Road and reduce the cost of the trade process. Therefore, as far as the influence of China's tea export trade is concerned, economic factors, terms of trade factors, demographics and other factors will have different degrees of influence on China's tea export trade. This paper argues that a country's high economic development level and free trade environment will promote China's tea export trade, and with the implementation of the Belt and Road initiative, the high demand from populous countries will also stimulate China's tea export.

3. Data and Model

3.1 Model Setting and Variable Definition

In this paper, the DID model is selected as the empirical model because it can analyze and evaluate the impact of policies and is widely used in academic research. The purpose of this paper is to study the policy effect of the Belt and Road Initiative on China's tea export trade.

Before using the DID model, the following assumptions should be considered: whether the time when countries are subject to policy shocks is random, and whether the selection of countries along the routes is random. Although there is a definite date for the launch of the Belt and Road Initiative, i.e., the end of 2013, it is not necessarily the date for the completion of Belt and Road cooperation with any particular country. The Belt and Road Initiative welcomes the participation of countries from all over the world. Any country willing to cooperate can consult with China. The open nature of the initiative makes it impossible to predict in advance whether a country will join. Therefore, the above two assumptions can be considered satisfied.

This paper takes China's tea export volume to other countries as the explained variable and introduces two explanatory variables, namely, the policy dummy variable and the time dummy variable. The policy dummy variable characterizes whether a country is a member of the Belt and Road Initiative. Countries that have accepted the Belt and Road cooperation agreement with China by 2020 are taken as the treatment group and given a value of 1, while countries that have not yet joined the Belt and Road Initiative are taken as the control group and given a value of 0. As the Belt and Road Initiative was put forward at the end of 2013, 2014 was regarded as the policy impact point of the Belt and Road Initiative, and before 2014, it was regarded as the time before the impact of the Belt and Road Initiative, with a value of 0. The years 2014 and after 2014 are regarded as the times after the impact of the Belt and Road Initiative, and the value assigned is 1. In addition, this paper selected some macroeconomic variables and demographic variables as control variables, such as GDP, inflation rate, unemployment rate, economic freedom index, human development index, population density, etc., to control the differences among different countries as much as possible. Finally, the following model is established:

$$TeaTradeValue_{it} = b_0 + b_1 Treat_i + b_2 Post_t + b_3 Treat_i \times Post_t + b_4 Controls_{it} + g_t + e_{it}$$

In the model, *TeaTradeValue* represents the explained variable, β_0 represents the model intercept term, and β_1, β_2 and β_4 are the regression coefficients of variables. β_3 represents the net effect of the Belt and Road Initiative. If β_3 is greater than 0, it can be considered that the Belt and Road Initiative has a promoting effect on China's tea export trade. Controls indicates control variables. γ_t represents the time fixed effect reflecting the time trend. ε_{it} is the random error term of the model, where *i* represents the regional dimension, and *t* represents the time dimension. For example, China's tea export volume to country *i* in year *t* is expressed as $TeaTradeValue_{it}$.

3.2 Research Samples and Data Sources

To facilitate data collection and empirical analysis, this paper randomly selects 10 member states of the Belt and Road Initiative as the treatment group, namely, the Russian Federation, Ukraine, Belarus, Georgia, Armenia, Poland, Romania, Czech Republic, Bulgaria and Hungary. The selected control group is 10 Western European countries that have not yet reached cooperation with China: Spain, Germany, France, Switzerland, Belgium, Denmark, Sweden, the Netherlands, the United Kingdom and Ireland. Related variables and data sources are shown in Table 1.

Table 1 Variable Description And Data Sources

	Variable name	Variable meaning	Data source
Explained variable	TeaTradeValue	China's tea export trade volume to other countries	UN Comtrade
Explanatory variable	Treat	Policy dummy variable, reflecting whether a country is a member of the Belt and Road Initiative. “Yes” takes 1, “No” takes 0.	China's Belt and Road Network
	Post	Time dummy variable, reflecting whether countries have joined the Belt and Road Initiative in that year. “Yes” takes 1, “No” takes 0.	China's Belt and Road Network
	Treat×Post	Dummy variable that measures the policy effect of the treatment group	
Control variable	GDP	Gross domestic product (US $)	World Bank
	P_GDP	GDP per capita (US $)	World Bank
	GDP_growth	Annual growth rate of GDP (%)	World Bank
	Inflation	Inflation rate (%)	World Bank
	Unemployment	Unemployment rate (%)	World Bank
	EFI	Economic freedom index	Heritage Foundation
	HDI	Human development index	United Nations Development Programme
	DP	Population density (people/km^2)	World Bank
	Sex	Sex ratio (%, females=100)	World Bank

3.3 Descriptive Statistics

In data processing, collinearity of Treat, HDI and P_GDP was found to some extent. Therefore, two control variables, HDI and P_GDP, were deleted in this paper to avoid affecting the regression of the overall data. After deletion, the descriptive statistical results of the sample are shown in Table 2.

4. Empirical Analysis

4.1 Parallel Trend Test

The basic assumption of the dual difference method is that, if no policy event occurs, the change trend of the treatment group and the control group is the same, that is, it can be observed that the treatment group and the control group should have the same change trend before the policy occurs. If the trends of tea export trade between the treatment group and the control group are not parallel before the implementation of the Belt and Road Initiative, the regression results may be biased. Therefore, this paper selects three years before and three years after the policy is implemented to test whether the explained variables satisfy the parallel trend hypothesis between the treatment group and the control group. The test results are shown in Figure Ⅰ. The coefficient fluctuated near 0 for two years before the policy occurred, while the coefficient was significantly positive after the policy occurred. This indicates that the parallel trend hypothesis is satisfied, and a comparison can be made between the treatment group and the control group.

4.2 Basic Regression

Considering that the significant difference in economic development between different years may disturb the research results, the time effect is also controlled in the regression model. The basic regression results are shown in Table 3. Model Ⅰ in the table is the result without control variables, and Model Ⅱ is the result with control variables. The comparison between the two models shows

that the regression results with control variables are more accurate. Therefore, to better study the impact of the Belt and Road on China's tea export trade, other characteristics of each country should be added as control variables to control the differences between countries. According to the coefficient of interaction item *Treat×Post* in Model Ⅱ in Table III, the influence coefficient of the Belt and Road Initiative on China's tea export trade is 2.426, which is significant at the 10% level, indicating that the Belt and Road Initiative has significantly promoted China's tea export trade. This empirical result verifies the theoretical analysis.

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TeaTradeValue	260	13.235	3.869	0	17.802
Treat	260	.5	.501	0	1
Post	260	.538	.499	0	1
Treat×Post	260	.269	.444	0	1
GDP	260	26.524	1.593	22.881	29.008
Inflation	260	4.161	7.98	-4.667	75.277
Unemployment	255	8.353	4.964	.5	26.09
PD	260	142.44	118.69	8.716	518.00
GDP_growth	260	1.397	3.984	-14.759	25.176
Sex	260	.942	.043	.857	1.004
EFI	260	68.362	8.921	45	82.5
Note: TeaTradeValue and GDP are logarithmic forms					

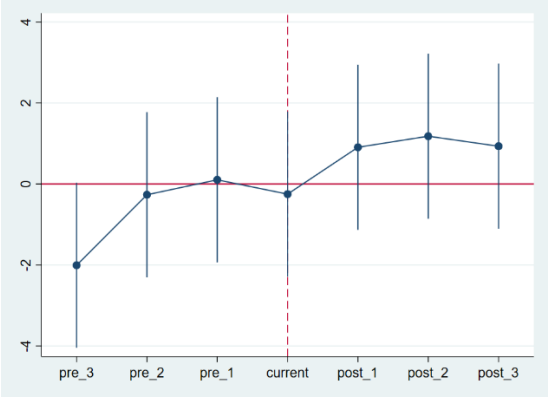

Figure Ⅰ. Parallel Trend Test Diagram

Table 3 the Impact Of the Belt and Road Initiative on China's Tea Export Trade

	Ⅰ	Ⅱ
VARIABLES	TeaTradeValue	TeaTradeValue
Treat×Post	1.852	2.426*
	(1.312)	(1.348)
GDP		1.985***
		(0.272)
Inflation		0.0341
		(0.0210)
Unemployment		0.0160
		(0.0420)
PD		0.00500***
		(0.00124)
GDP_growth		-8.36e-05
		(0.0391)
Sex		-3.985

		(24.58)
EFI		-0.111
		(0.0994)
Constant	14.63***	-29.29
	(0.627)	(23.62)
Time fixed effects	Yes	Yes
Observations	260	255
R^2	0.1708	0.8860

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.3 Placebo Test

To further test the robustness of the empirical results in this paper, the placebo test was used to conduct an indirect counterfactual test. Since 6 of the 10 countries selected in this paper joined the Belt and Road Initiative within the three years proposed by the initiative, the proposed time of the Belt and Road Initiative will be delayed by three years, namely, 2017, for testing. The test results are shown in Table 4. Regardless of whether control variables are added, the regression results of $Treat \times Post_{2017}$ are no longer significant. This indicates that after the initiative was put forward, the Belt and Road Initiative

was the main factor influencing the growth of China's tea exports to the Belt and Road countries, rather than other factors. That is, the research results of this paper are robust.

5. Conclusion

This paper takes 20 countries from 2008 to 2020 as a sample, using the difference-in-differences model, with China's tea export trade for the country as the explained variable, with characterization of the policy of the Belt and Road initiative members as virtual variables, and using the Belt and Road initiative time dummy variable as the explanatory variable. At the same time, control variables such as macroeconomic variables and demographic indicators are used to empirically explore the promotion effect of the Belt and Road Initiative on China's tea export trade. The results show that the Belt and Road Initiative has a significant positive impact on China's tea export trade and promotes tea trade between China and the Belt and Road countries.

Table 4 Placebo Test Results

	I	II
VARIABLES	TeaTradeValue	TeaTradeValue
$Treat \times Post_{2017}$	1.439	1.787
	(1.104)	(1.127)
Controls	No	Yes
Constant	14.35***	-26.08
	(0.610)	(23.07)
Time fixed effects	Yes	Yes
Observations	260	255
R^2	0.1708	0.8817

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In view of the positive promotion effect of the Belt and Road on China's tea export trade, this paper puts forward the following two suggestions for the growth of tea export trade. First, China should vigorously promote the development of cross-border e-commerce logistics. The products of the information age enable people from all regions along the Belt and Road to shop on network

platforms, breaking the limitation of time and space, which promotes the flow of products and capital and creates major opportunities for regional economic cooperation. Second, China should strengthen the quality control of export products. With the development of economic globalization, international trade barriers are becoming increasingly strict, and the quality and safety of import and export products are important issues for China's export trade. China needs to solve the technical problems during the manufacturing process and preservation, improve the quality inspection standards of export products, and ensure the quality of export products.

Judging from the current situation, both China and countries along the Belt and Road initiative have their own unique advantages and bright prospects for development. Looking forwards to the future, the Belt and Road initiative will not only promote China's tea trade but also promote in-depth cooperation between countries in all aspects and further promote the rapid development of countries, thus promoting the great development of global trade.

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