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THE PROMOTION EFFECT OF THE BELT AND ROAD INITIATIVE ON CHINA'S FOREIGN DIRECT INVESTMENT: AN EMPIRICAL ANALYSIS BASED ON FIRM LEVEL

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ABSTRACT

Based on the dataset of listed companies in China from 2014 to 2017, this study uses difference in differences (DID) and propensity score matching (PSM) approaches to systematically evaluate the promotion effect of China's Belt and Road Initiative (BRI) on Chinese firms' outward foreign direct investment (OFDI). The empirical findings are as follows: (a) after the initiative, listed Chinese firms have significantly increased OFDI in countries along the Belt and Road, but this result cannot be clearly attributed to the implementation of the policy; (b) compared with firms that have already invested in countries along the Belt and Road, the initiative has strongly encouraged uninvested listed firms to invest along the BRI routes; (c) the new entry incentives of OFDI firms have industry differences in investment choices; (d) the shareholding ratio of state-owned investors has no impact on the policy effect. Based on the findings, we put forward some policy recommendations to help firms invest in the countries along the Belt and Road better.

Contribution/Originality: This study is one of very few empirical studies that have investigated the promotion effect of the Belt and Road Initiative on China's foreign direct investment at firm level.

1. INTRODUCTION

In response to the Belt and Road Initiative (BRI), more and more Chinese firms have begun trying to enter BRI countries to conduct business through outward foreign direct investment (OFDI). The Ministry of Commerce of the People's Republic of China reported that the total investment of Chinese firms in countries along the Belt and Road has exceeded US$100 billion, and the establishment of overseas firms exceeded 10,000 in 2019. The policy objective of the BRI in the economic and trade fields is to promote cross-border investment and trade by firms of relevant countries. On the domestic side, the main goal is to motivate China's OFDI and exports. Therefore, evaluating the stimulus effect of the BRI on OFDI has become an important part of evaluating the construction level of the Belt and Road.

Luo, Xue, and Han (2010) indicated that the government's OFDI promotion policy can improve the global competitiveness of local firms, thus creating incentives for OFDI. From the macro perspective of the total amount, according to past experience, domestic investment entities usually respond positively to the OFDI promotion policies issued by the state (Chen, Dollar, & Tang, 2016; Cheung & Qian, 2009). The BRI is no exception – after the

National Development and Reform Commission with other three departments jointly issued the *Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road* in early 2015, China's OFDI has increased substantially. Deng, He, and Jiang (2019) showed that the strengthening of bilateral policy coordination between China and the Belt and Road countries significantly increased OFDI volume from Chinese firms in these countries; Zhang (2016) investigated China's OFDI in 50 countries along the Belt and Road and found that since the inception of the BRI, the investment in infrastructure, business environment, information technology, financial services and institutional supply has significantly encouraged Chinese firms to conduct OFDI in these countries. Overall, at the macro level similar to general investment promotion policies, there is not much controversy surrounding the incentive effect of the BRI on China's OFDI.

However, firms are the most important investment entities for OFDI activities. Therefore, relative to the macro-level aggregate measurement, when evaluating the promotion of OFDI of the BRI, we should pay more attention to firm-level behavior. Although some scholars have explored this, these studies still have some deficiencies. On the one hand, the policy effect identification of some studies is statistically less reliable. For example, Shen and Jin (2018) studied the impact of the institutional difference complementary effect of the BRI on the OFDI behavior of firms based on China's OFDI micro samples, but in their empirical model, they only used time variables to represent the implementation of the policy, which made the validity of the empirical results challenging, because it is difficult to believe that the effects identified based on this model are caused by the BRI rather than other unobservable time-related factors. On the other hand, the latest studies, such as Yu, Qian, and Liu (2019) and Lv, Lu, Wu, and Wang (2019), used a more rigorous causal inference method in the identification of the promotion effect of BRI on OFDI at firm level. However, in the empirical analysis, it takes the host country rather than the firm itself as the individual research object. To a certain extent, this method avoids covering up corporate behavior based on the measurement of the total amount of OFDI currency, and it can effectively measure the increase in the number of OFDI transactions in the Belt and Road countries as a result of the policy. But the problem of "synthetic fallacy" still exists. Whether the policy effect is a general law applicable to all firms or is it the result of the behavior of individual firms is a question that still needs to be answered by studies that focus on firm level. In the OFDI activities of Chinese firms, the behavior of the listed companies is representative and instructive. The listed companies and their subsidiaries are irreplaceable entities in important project investments and high-risk businesses. At present, more than one-third of the listed companies in China have established investment entities in the Belt and Road regions, and the average annual number of new investments has exceeded 500. This evidence provides conditions for systematically evaluating the OFDI promotion effects of the BRI. Therefore, in order to make up for the shortcomings of the existing studies, we take China's listed companies from 2014 to 2017 as the research objects and investigate the promotion effect of OFDI of firms under the Belt and Road Initiative.

This study will focus on the following: (1) whether the inception of the BRI has promoted OFDI in policy-related industries; (2) whether the inception of BRI has encouraged new OFDI from companies that have not yet invested in the Belt and Road countries; (3) if there are any differences in the promotion effect of the Belt and Road on firms' OFDI between developed countries and developing countries; (4) whether the influence of state-owned investors on firms will affect the OFDI promotion effect of the Belt and Road; (5) what the specific performance of the Belt and Road is for firms' OFDI promotion in various industries. Finally, on the basis of empirical results, we will evaluate the degree of realization of the BRI and provide recommendations for relevant policy-making departments.

2. METHODOLOGY AND DATA

2.1. Model Specification and Method

This paper used the Difference in Differences (DID) method to identify the real policy effects. This method is a simulation of natural experiments conducted by dividing the research samples into groups - those affected by policy

and the control group not affected by policy, which shows trends of accepting policy intervention and the natural trend of not accepting policy of the outcome variable, and can be observed separately. By calculating the difference between the two trends, we can identify the trend change of the outcome variables that is caused by the policy on the premise of separating the natural trend. Compared with directly using regression of dummy variables (policy implementation) with outcome variables to get the covariation relationship between the outcome variables and time, the DID method can identify the true effect of the policy on the outcome variable and provide a reliable basis for evaluating the effectiveness of policies (Imbens & Wooldridge, 2009). Referring to the classic practices of Duflo (2001) and Moser and Voena (2012), the DID estimation equations are defined as follows:

$$InvB\&R_{it} = \alpha + \beta_1 DID_{1;it} + \delta_1 AfterB\&R_{it} + \delta_2 IsZZB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \quad (1)$$

$$InvB\&RDC_{it} = \alpha + \beta_1 DID_{1;it} + \delta_1 AfterB\&R_{it} + \delta_2 IsZZB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \quad (2)$$

$$\begin{aligned} InvB\&R_{it} = \alpha + \beta_1 DID_{it} + \beta_2 DID_{1;it} * StaOwn_{it} \\ + \delta_1 AfterB\&R_{it} + \delta_2 IsZZB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \end{aligned} \quad (3)$$

$$\begin{aligned} InvB\&RDC_{it} = \alpha + \beta_1 DID_{1;it} + \beta_2 DID_{1;it} * StaOwn_{it} \\ + \delta_1 AfterB\&R_{it} + \delta_2 IsZZB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \end{aligned} \quad (4)$$

$$InvB\&R_{it} = \alpha + \beta_1 DID_{2;it} + \delta_1 AfterB\&R_{it} + \delta_2 IsNoB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \quad (5)$$

$$InvB\&RDC_{it} = \alpha + \beta_1 DID_{2;it} + \delta_1 AfterB\&R_{it} + \delta_2 IsNoB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \quad (6)$$

$$\begin{aligned} InvB\&R_{it} = \alpha + \beta_1 DID_{2;it} + \beta_2 DID_{2;it} * StaOwn_{it} \\ + \delta_1 AfterB\&R_{it} + \delta_2 IsNoB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \end{aligned} \quad (7)$$

$$\begin{aligned} InvB\&RDC_{it} = \alpha + \beta_1 DID_{2;it} + \beta_2 DID_{2;it} * StaOwn_{it} \\ + \delta_1 AfterB\&R_{it} + \delta_2 IsNoB\&R_{it} + \boldsymbol{\gamma^T ControlVar_{it}} + c + \varepsilon_{it} \end{aligned} \quad (8)$$

In the model, the outcome variables $InvB\&R_{it}$ and $InvB\&RDC_{it}$ respectively represent the number of newly added investment entities in period t of firm i in all countries along the Belt and Road and the developed countries along the Belt and Road. $AfterB\&R_{it}$ is a dummy variable that takes the value of 1 when $t \geq 2015$ (the official implementation of the Belt and Road in early 2015), and 0 otherwise. $IsZZB\&R_{it}$ is a dummy variable that takes the value of 1 if the firm i in period t belongs to the industry affected by the Belt and Road as defined by the CSI Belt and Road index, and 0 otherwise. $IsNoB\&R_{it}$ is a dummy variable that takes the value of 1 if the firm i has not invested in countries along the Belt and Road before the start of period t, and 0 otherwise. $DID_{1;it}$ and $DID_{2;it}$ are interaction terms of $IsZZB\&R_{it} * AfterB\&R_{it}$ and $IsNoB\&R_{it} * AfterB\&R_{it}$. Using

the OLS method to estimate the parameters of $DID_{1;it}$ and $DID_{2;it}$ can obtain the policy effect value of the DID policy intervention. We also added the interaction items of $DID_{1;it} * StaOwn_{it}$ and $DID_{2;it} * StaOwn_{it}$ to investigate the influence of state-owned investors on policy effects, where $StaOwn_{it}$ refers to the proportion of state-owned shares. In addition, $\mathbf{ControlVar_{it}}$ is the control variable vector, c is the two-way fixed effect, and ε_{it} is the random error term.

Listed companies in the Belt and Road policy-related industries are designated as the treated group in equations 1-4, and other listed companies are designated as the control group. They are mainly used to evaluate the promotion effect of the BRI on the newly added OFDI of listed companies in policy-related industries in countries along the Belt and Road. Equations 5-8 use listed companies that have not invested in countries along the Belt and Road as the treated group, and listed companies that have made investments as the control group. They are mainly used to evaluate the promotion effect of the BRI on listed companies that have not yet invested in Belt and Road countries to invest in countries along the Belt and Road. Compared with equations 1 and 2 and equations 5 and 6, equations 3 and 4 and equations 7 and 8 include the interaction items of the state-owned investor's shareholding ratio ($StaOwn_{it}$) and the policy effect ($DID_{1;it}$ or $DID_{2;it}$) to investigate its adjustment effect.

When using the DID method, if the policy itself affects the individual's grouping, then the policy effect cannot be estimated. Whether a listed company belongs to BRI-related industries, or whether it has previously invested in countries along the Belt and Road, will not be significantly affected by the current policy intervention. However, in order to further eliminate potential endogenous problems, we use the propensity score matching (PSM) method to group variables. Specifically, we select the appropriate number of covariates related to grouping but not related to policy according to the existing theories and use the logit model to estimate the propensity score of each observation. Then we exclude observations whose propensity score does not match the value of the intervention grouping variable from the DID analysis. After that, the exogeneity of the observation grouping can be guaranteed, in other words, the estimation of the DID policy effect will be more effective if the number of unmatched observations is excluded (Heckman, Ichimura, & Todd, 1997).

2.2. Data Description

2.2.1. Data Source

The data used in this paper mainly comes from the CSMAR listed companies overseas direct investment research database. The database contains basic information on overseas investment entities of Chinese listed companies, including OFDI host country, main business, entry time, etc., and it also records some basic information of OFDI-related parent companies, such as directors' overseas background and ownership structure. We also use the annual report information of listed companies obtained from the Wind database as a supplement, specifically for extracting financial data including research and development expenditure, advertising expenditure, sales revenue, total assets, asset–liability ratio, and return on equity (ROE).

We obtained 8,494 observations from 2,357 listed companies between 2014 and 2017. According to the primary industry classification compiled by the China Securities Index (CSI), the distribution of these firms and their investment situations in countries along the Belt and Road are shown in Table 1.

Table 1. Industry distribution of firms.

Industry	Firms	Newly added investment entities of countries along the Belt and Road	Newly added investment entities of developed countries along the Belt and Road
Information technology	379	374	190
Telecommunications	63	48	12
Financial real estate	166	165	116
Energy	49	71	22
Raw materials	327	200	75
Medicine & health	200	75	36
Main consumption	120	62	25
Optional consumption	407	287	115
Industry	596	719	284
Public utilities	50	40	31

Note: Considering the similarity of some industries and too few observations in some industries, in the following empirical analysis, the information technology and telecommunications, energy and raw materials, industry and public utilities will be analyzed as one category.

2.2.2. Variables and Data Statistics

The operational definitions and data statistics of the variables used in this empirical analysis are shown in Table 2. In addition to the outcome variables mentioned above, we also chose directors' overseas background, research and development (R&D) intensity, advertising intensity, institutional investor shareholding ratio, and state-owned investor shareholding ratio as covariates used in PSM. These variables also constitute the control variables of the DID model with the three basic financial variables of total assets, asset–liability ratio, and ROE.

Table 2. Variable definitions and descriptive statistics.

Variables		Definition	Obs	Mean	Std. Dev.
Outcome variables	$InvB\&R_{it}$	Number of new investment entities in all countries along the Belt and Road	8494	0.481	22.170
	$InvB\&RDC_{it}$	Number of new investment entities in developed countries along the Belt and Road	8494	0.213	9.854
Intervention grouping variables	$IsZZB\&R_{it}$	Firms belonging to the industry affected by the BRI as defined by the CSI Belt and Road index, 1; otherwise, 0.	8494	0.241	-
	$IsNoB\&R_{it}$	Firm has not invested in the Belt and Road countries before t, 1; otherwise, 0.	8494	0.799	-
PSM covariate	$OverseaBack_{it}$	Number of directors with overseas background on the board	8494	1.623	1.892
	$R\&DInten_{it}$	Ratio of R&D expenditure to sales revenue	8493	0.038	0.054
	$ADInten_{it}$	Ratio of advertising expenditure to sales revenue	8493	0.011	0.038
	$InsOwn_{it}$	Institutional investor shareholding ratio	8494	4.716	5.683
	$StateOwn_{it}$	State-owned investors shareholding ratio	8494	4.767	14.225
Other control variables	$Asset_{it}$	Total assets (100 million yuan)	8494	804.202	9285.144
	DA_{it}	Ratio of total liabilities to total assets	8494	0.450	0.543
	ROE_{it}	Ratio of net profit to shareholders' equity	8472	0.053	0.829

Source: Developed by authors based on the data from CSMAR and Wind.

The PSM method requires that the covariates used in matching are highly related to grouping but not to policy. Reuber and Fischer (1997) and Blonigen (2005) indicated that the number of directors with overseas background on the board ($OverseaBack_{it}$), R&D intensity ($R\&DInten_{it}$) and advertising intensity

($ADInten_{it}$) are the most classic influential factors of OFDI behavior at firm level. In addition to the above variables we added equity structure variables, such as institutional investor shareholding ratio ($InsOwn_{it}$) and state investor shareholding ratio ($StateOwn_{it}$). Considering that R&D intensity and advertising intensity are usually sticky in the short-term (Anderson, Banker, & Janakiraman, 2003), corporate board institutions' shareholding structure will not change significantly in the short term. Therefore, it can be considered that these variables have nothing to do with the BRI and are suitable as PSM covariates.

3. RESULTS AND DISCUSSION

3.1. Overall Policy Effect

This study uses the OLS method to perform regression on each model. Since the sample data is short-panel data referring to the classic practice of the DID analysis, the individual fixed effects and time fixed effects are both controlled when performing regression on the model (Imbens & Wooldridge, 2009). At the same time, policy implementation variables and intervention grouping variables are also included in the model to control the time effect of policies and the dynamic effects of grouping. In addition, because the parameters that reflect the overall external validity of the model, such as the parameters of the control variables and the goodness of fit, are not important for DID analysis, in order to save space we will not talk about them in this part.

Table 3. Overall policy effect regression results (1).

Outcome variables	Model (1)	Model (2)	Model (5)	Model (6)
	InvB&R	*InvB&RDC*	*InvB&R*	*InvB&RDC*
Policy effect	0.055 (0.057)	0.010 (0.037)	0.172*** (0.067)	0.065 (0.043)
Policy implementation variables	0.151*** (0.033)	0.076*** (0.022)	0.024 (0.063)	0.022 (0.041)
Intervention grouping variables	-	-	-0.106 (0.080)	-0.047 (0.052)
Control variables	Control	Control	Control	Control
Time fixed effect	Control	Control	Control	Control
Individual fixed effect	Control	Control	Control	Control
PSM	Yes	Yes	Yes	Yes
Observations	8384	8384	8445	8445

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 3 shows estimation results of equations 1 and 2 and equations 5 and 6 based on the full sample. The number of observations retained after using PSM accounted for more than 99% of the total sample number, which means that PSM does not cause serious subjective sample selection problems. The estimation results of the policy effects in equations 1 and 2 show that the implementation of the Belt and Road had no significant impact on new investments of listed companies belonging to policy-related industries in countries along the Belt and Road. However, the estimation results of the policy implementation variables show that the new investment of all listed companies in the countries along the Belt and Road increased by an average of 0.151 ($p < 0.01$) after the BRI, and that of developed countries along the Belt and Road increased by an average of 0.076 ($p < 0.01$). This result indicates that the promotion of OFDI for companies under the Belt and Road may not be limited to listed companies in policy-related industries but is applicable to all listed companies. However, since the influence of other time-related factors cannot be excluded, whether the above effects actually exist is not certain. The policy effect

estimation results of equation 5 show that the implementation of the Belt and Road has encouraged listed companies that have not yet invested in the countries along the Belt and Road to expand OFDI in these countries. As a result of the Belt and Road, these companies add investment in the countries along the Belt and Road at an average of 0.172 ($p < 0.01$). However, the results of equation 6 show that the BRI has no obvious policy effect on new OFDI in listed countries that have not invested in developed countries along the Belt and Road. In other words, the aforementioned policy effects are mainly reflected in the incentives for listed companies to implement OFDI in developing countries along the Belt and Road. Table 4 reports the estimation results of equations 3 and 4 and equations 7 and 8 based on the full sample. After adding the moderating effect of the state-owned investors' shareholding ratio on the policy effect, the parameter estimates and significance of other major variables have not changed significantly, and the moderating effect itself is not significant. This shows that there is no obvious connection between the influence of state-owned investors on companies and the promotion of OFDI under the Belt and Road.

Table 4. Overall policy effect regression results (2).

Outcome variables	Model (3)	Model (4)	Model (7)	Model (8)
	InvB&R	*InvB&RDC*	*InvB&R*	*InvB&RDC*
Policy effect	0.055 (0.057)	0.010 (0.037)	0.172*** (0.067)	0.065 (0.043)
The moderating effect of state-owned investors' shareholding on policy effect	0.000 (0.003)	-0.000 (0.002)	0.002 (0.002)	0.001 (0.001)
Policy implementation variables	0.151*** (0.033)	0.076*** (0.022)	0.024 (0.063)	0.022 (0.041)
Intervention grouping variables	-	-	-0.106 (0.080)	-0.047 (0.052)
Control variables	Control	Control	Control	Control
Time fixed effect	Control	Control	Control	Control
Individual fixed effect	Control	Control	Control	Control
PSM	Yes	Yes	Yes	Yes
Observations	8384	8384	8445	8445

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5. Industry-based policy effect regression results (1).

Outcome variables	Model (5)						
	InvB&R						
	Information technology & telecommunications	Financial real estate	Energy & raw materials	Medicine & health	Main consumption	Optional consumption	Industry & public utilities
Policy effect	0.216* (0.119)	-0.333 (0.873)	0.372*** (0.102)	0.409*** (0.138)	-0.006 (0.153)	0.152 (0.130)	0.160 (0 .109)
Policy implementation variables	-0.021 (0.113)	0.790 (0.873)	-0.206** (0.099)	-0.375*** (0.136)	0.119 (0.144)	0.010 (0.123)	0.050 (0.100)
Intervention grouping variables	0.056 (0.139)	-2.090** (0.990)	0.062 (0.125)	-0.328** (0.174)	0.710 (0.234)	0.083 (0.157)	-0.143 (0.127)
Control variables	control	control	control	control	control	control	control
Time fixed effect	control	control	control	control	control	control	control
Individual fixed effect	control	control	control	control	control	control	control
PSM	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1521	618	1386	679	433	1368	2314

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

3.2. Industry-Based Policy Effect

Based on the results of the overall policy effect analysis, we apply equation 5 and its paired equation 6 to samples from different industries for further analysis. Table 5 and Table 6 respectively report the regression results of the two models.

There are obvious differences in the promotion effects of firms' OFDI in different industries by the BRI. First of all, the promotion effect of the BRI for listed companies that have not invested in countries along the Belt and Road to conduct OFDI in relevant countries is concentrated only on information technology and telecommunications services, energy and raw materials, and medical and health industries. The policy effect in other industries is not clear. Second, for listed companies in energy and raw materials, and medical and health industries that have not invested in countries along the Belt and Road, the implementation of the Belt and Road has created a stronger incentive to add OFDI to all countries along the Belt and Road (energy and raw materials industries: an average increase of 0.372, $p < 0.01$; medical and health industries: an average increase of 0.409, $p < 0.01$) than to those in the developed countries along the Belt and Road (energy and raw materials industries: an average increase of 0.121, $p < 0.05$; medical and health industries: the effect is not significant). For listed companies in the information technology and telecommunications industries that have not invested in countries along the Belt and Road, the policy's promotion of OFDI mainly focuses on the developed countries along the Belt and Road (an increase of 0.169 on average, $p < 0.01$).

Table 6. Industry-based policy effect regression results (2).

Outcome variables	Model (6)						
	InvB&R&RDC						
	Information technology & Telecommunications	Financial real estate	Energy & raw materials	Medicine & health	Main consumption	Optional consumption	Industry & public utilities
Policy effect	0.169*** (0.065)	-0.179 (0.645)	0.121** (0.054)	0.128 (0.089)	-0.023 (0.115)	-0.009 (0.080)	0.058 (0.057)
Policy implementation variables	-0.072 (0.061)	0.502 (0.645)	-0.071 (0.053)	-0.109 (0.088)	0.082 (0.109)	0.092 (0.076)	0.006 (0.053)
Intervention grouping variables	0.127* (0.076)	-1.802** (0.731)	0.113* (0.067)	-0.172 (0.113)	0.263 (0.176)	0.062 (0.097)	-0.030 (0.066)
Control variables	Control	Control	Control	Control	Control	Control	Control
Time fixed effect	Control	Control	Control	Control	Control	Control	Control
Individual fixed effect	Control	Control	Control	Control	Control	Control	Control
PSM	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1521	618	1386	679	433	1368	2314

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

4. ROBUSTNESS TESTS

4.1. Balance Test

The DID method requires the distribution of covariates between the treated group and the control group to be balanced to ensure the similarity of the characteristics between both groups except for policy intervention, so that the model can simulate the natural experiment more realistically. Moreover, because the sample used in this study only had one year of observation records before the implementation of the policy, it is not possible to test the common trends. The support of balanced sample groupings to the validity of policy effect estimation results is more

important. Therefore, we adopted a common practice in similar studies, and drew a distribution tendency score map for the samples and groups used in the empirical analysis.

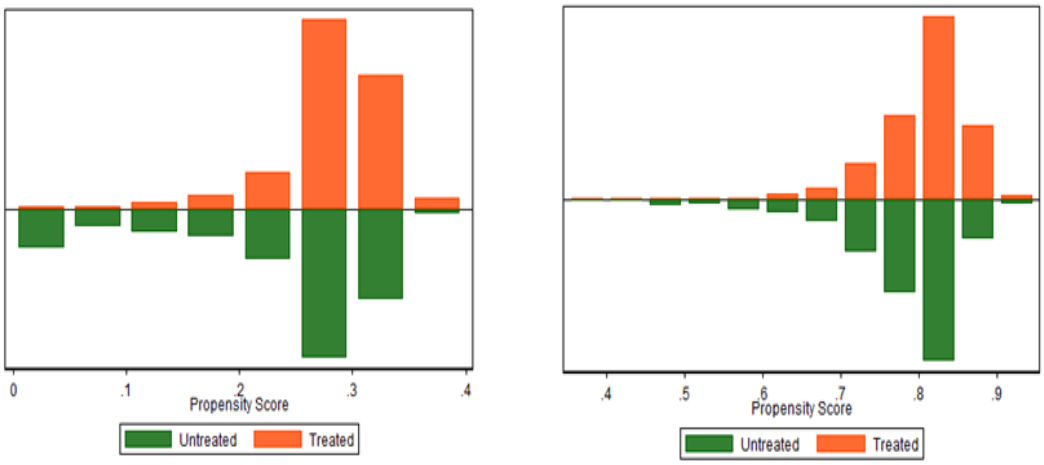

Figure 1. Grouped distribution of the full sample propensity scores.

From the distribution of the grouping propensity scores presented in Figure 1 and Figure 2, the treated group and control group of the samples used in the empirical analysis have a similar distribution trend for the entire industry or sub-industry. In addition, the results of the regular test also showed that after the PSM of the treated and control groups of each sample, the differences between the covariate are mostly below 10%. Overall, the sample grouping is balanced.

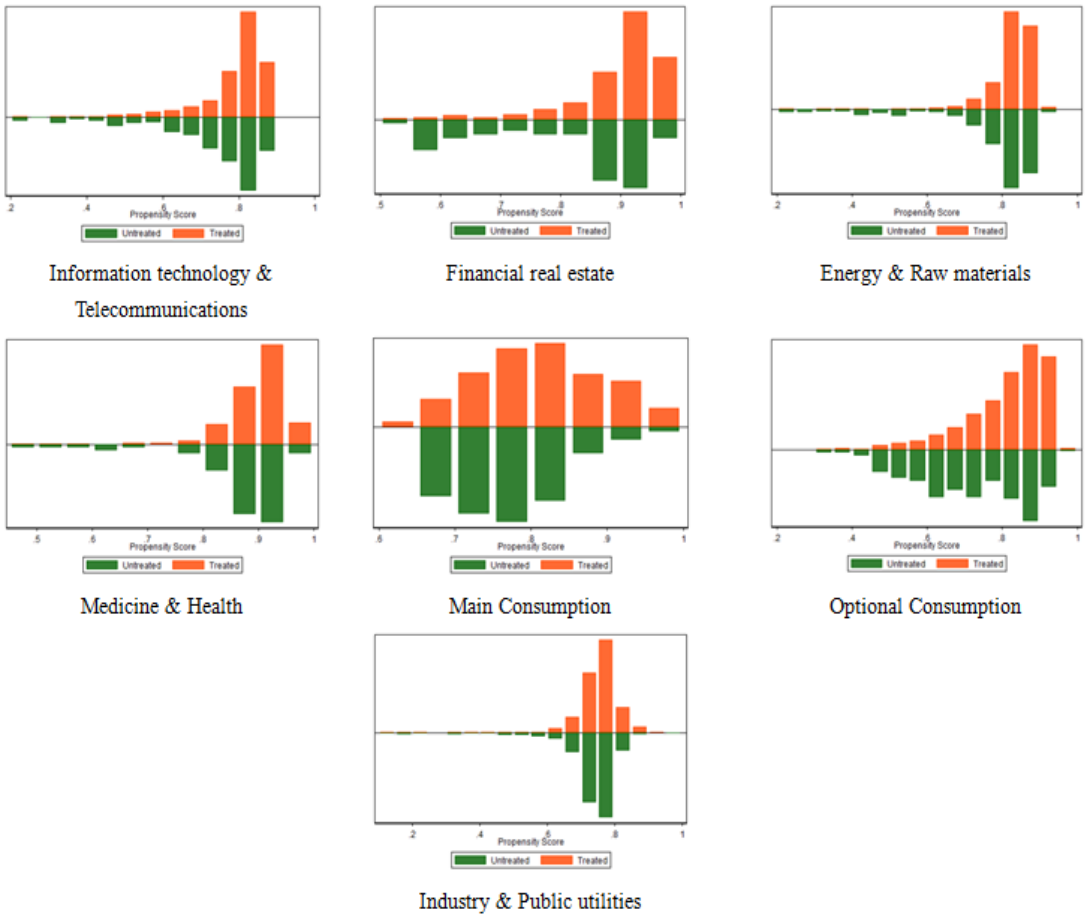

Figure 2. Propensity score distribution of samples by industry, grouped according to whether or not they have invested in the countries along the Belt and Road.
Source: Developed by authors.

4.2. Placebo Test

In order to exclude the influence of some important unobservable factors, we performed a placebo test on the results. We assumed that there was a certain unobservable factor that may have a policy-like effect on the outcome variables. By incorporating this alternative mechanism into the original model and re-analyzing the DID, the authenticity of the original policy effect can be further investigated by separating the placebo effect.

Since the policy was implemented in early 2015, an unobservable factor that needs to be examined is a policy called Made in China 2025, which was issued in the first half of 2015. Referring to the approach of Tanaka (2015) in the empirical analysis, equations 5 and 6 with significant policy effects include the interaction items of intervention grouping variables and original policy implementation variables according to whether they belong to the Made in China 2025 policy. A placebo test was performed on all samples, information technology and telecommunications samples, and medical and health industry samples that have not invested in countries along the Belt and Road, respectively. The placebo test results reported in Table 7 show that although Made in China 2025 promoted OFDI of firms in some countries along the Belt and Road, this policy has not had a significant effect on the policy effect of the Belt and Road. This result further supports the authenticity of the identification of policy effects in the empirical analysis.

Table 7. Placebo test results.

Outcome variables	Model (5)	Model (6)	Model (5)	Model (6)	Model (5)	Model (6)
	InvB&R	*InvB&RDC*	*InvB&R*	*InvB&RDC*	*InvB&R*	*InvB&RDC*
	All industry		Information technology & telecommunications		Medical & health	
Policy effect	0.177***	0.066	0.168	0.140**	0.430***	0.136
	(0.067)	(0.043)	(0.119)	(0.065)	(0.139)	(0.090)
"Made in China 2025" policy effect	0.056	0.005	0.419***	0.256***	0.111	0.041
	(0.049)	(0.032)	(0.141)	(0.077)	(0.109)	(0.071)
Policy implementation variables	-0.010	0.019	-0.358**	-0.278***	-0.489***	-0.151
	(0.069)	(0.045)	(0.160)	(0.087)	(0.177)	(0.115)
Intervention grouping variables	-0.109	-0.048	0.102	0.155**	-0.340	-0.177
	(0.081)	(0.052)	(0.139)	(0.076)	(0.174)	(0.113)
Control variables	Control	Control	Control	Control	Control	Control
Time fixed effect	Control	Control	Control	Control	Control	Control
Individual fixed effect	Control	Control	Control	Control	Control	Control
PSM	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8445	8445	1521	1521	679	679

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

5. CONCLUSIONS AND RECOMMENDATIONS

China's OFDI has increased significantly. This paper estimates the policy effects of the BRI on China's OFDI at firm level, from which, we get the following conclusions:

(1) China's listed companies have significantly increased OFDI in countries along the Belt and Road after its implementation in 2015. Although, statistically speaking, it is difficult to judge whether this growth is due to policy stimulus or is merely a common time trend, it can at least show that the impact of the BRI on OFDI is not limited to the BRI-related industries or special projects. Instead, it emphasizes the removal of investment barriers and the expansion of investment fields at the macro level (Huang, 2016).

(2) The BRI has a more positive impact on listed companies that have not yet invested in countries along the Belt and Road to invest in these countries. According to the Uppsala model, a firm's international development should follow a gradual process. Compared with additional investment in a host country that has already invested, the establishment of an OFDI entity in a new country will undoubtedly face greater risks, and firms will be more cautious (Johanson & Vahlne, 1990). Therefore, we may indicate that the promotion effect of the BRI on the new entry of firms' OFDI is mainly reflected in the mitigation of the expected risks of Chinese firms' foreign investment.

(3) The promotion effect of the new entry of OFDI by the BRI has industry difference. Among the industries with significant policy effects, policy driven OFDI in energy and raw material, and medical and health are mainly concentrated in developing countries along the Belt and Road, while the information technology and telecommunications mainly invested in developed countries. This reflects that the former investment may focus on resources and markets, while the latter's is mainly technology-seeking and market-seeking OFDI (Dunning, 1981; Yang & Gao, 2017).

(4) The influence of state-owned investors on listed companies has no obvious impact on the promotion effect of OFDI of firms under the Belt and Road, which shows that the BRI in inspiring Chinese firms' OFDI is inclusive and spontaneous and it is not a form of "self-entertainment" for state-owned firms. Based on the above results, the paper recommends the following to policy makers regarding future policy orientation:

First, focus on identifying and solving the problems faced by Chinese firms in the process of deepening investment in countries along the Belt and Road. The results show that the firms that already have investments in the countries along the BRI route are not active enough to make additional investments. The Belt and Road should be a sustainable public product (Yu, 2017) and its promotion of firms' OFDI cannot be a one-off. Designing OFDI policy tools under the Belt and Road should focus more on the dynamic adjustment of the pace of OFDI activities of Chinese firms in different countries. The government should not only encourage firms to "go out", but also discover and solve problems encountered in the process of "remaining", and help firms achieve sustainable development of OFDI in countries along the Belt and Road. Second, refine policy management according to the characteristics of different industries. Firms' OFDI of different industries has different characteristics. It should be noted that under the overall policy framework, specific guidance and measures should be proposed for firms in different industries. For firms in industries with large technological gaps between domestic and abroad, the government should guide and support them to learn and develop advanced technologies through OFDI under the BRI to promote industrial upgrade. For firms in raw materials, energy and other industries that perform OFDI in countries along the Belt and Road in search of resources, the government should guide them to operate legally and compliantly and strengthen their risk management. For those industries where the Belt and Road investment is inactive, the government should investigate the possible OFDI needs under the BRI, and issue corresponding policies to further expand the Belt and Road international investment cooperation channel. Finally, pay attention to policy coordination with private enterprises. Private enterprises have been an important part in China's opening up. The incentives of the Belt and Road for OFDI have also received positive responses from private enterprises. Compared with state-owned enterprises, private enterprises have certain disadvantages in obtaining policy information, using policy tools, and mitigating policy risks. Therefore, the government should pay special attention to the coordination and communication of OFDI activities of private enterprises, facilitate their development, and reduce their institutional costs of performing OFDI under the Belt and Road.

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