

Analysis of CAFTA's promotion effect on FDI based on DID model

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Abstract. CAFTA (China-ASEAN Free Trade Area) has a strong promotion effect on FDI after its formal establishment, including both indirect effects due to trade liberalization and direct effects through investment and investment facilitation. This paper uses World Bank data from 2000-2019 for a quasi-natural experiment established by CAFTA using double differencing and concludes that CAFTA has a significant enhancing effect on FDI, and that the level of economic development, the rate of development, and the degree of trade liberalization of each member country within its free trade area have a significant impact on FDI. Meanwhile, this paper uses heterogeneity test to show that the establishment of CAFTA in countries with clean government and high education level is conducive to the increase of FDI. Countries with low contracting efficiency and high tax share will further improve the system due to the establishment of CAFTA, which is conducive to the further development of FDI.

Keywords: CAFTA; FDI; DID.

1. Introduction

With the stalemate in multilateral negotiations represented by the Doha Round of World Trade Talks, world regional cooperation has begun to shift from multilateral to bilateral cooperation. Currently, the major bilateral regional cooperation in the world includes EPA, TTIP, USJTA, CAI, CAFTA... The idea of CAFTA was first proposed by China at the beginning of the 21st century against the background of increasing exchanges and trade between China and neighboring Asian countries. The exploration of CAFTA was started after the framework of cooperation agreement between China and ASEAN was agreed in 2002. After specific agreements in 2004 and 2007, China and ASEAN agreed on matters related to trade in services and goods. In August 2009, China and ASEAN formally signed the China-ASEAN Investment Agreement, which came into effect on January 1, 2010, marking the official entry into force of the FTA for cooperation between China and ten ASEAN countries. Since the establishment of CAFTA, China's trade with ASEAN can account for 13% of the world's import and export trade, making it the largest FTA in South-South cooperation.

The establishment of CAFTA has promoted increased trade between China and ASEAN while investment cooperation between the two sides has also flourished. The establishment of CAFTA has promoted increased trade between China and ASEAN while investment cooperation between the two sides has flourished. 2020 ASEAN's actual investment in China amounted to nearly US\$8 billion and China's direct investment in ASEAN reached US\$16.1 billion. According to the World Bank's public database, China's net FDI inflows went from US\$42 billion in 2000 to US\$212 billion in net FDI inflows by 2020, and the net FDI inflows of the ten ASEAN countries are shown in Figure 1. Has the establishment of the China-ASEAN FTA really contributed to the growth of FDI? This paper will use data from 2010-2019 for CAFTA established quasi-natural experiment using DID model to empirically analyze China-ASEAN is all has a promotional effect on FDI. To better understand whether there is heterogeneity in the effectiveness of CAFTA establishment in promoting FDI, this paper conducts a heterogeneity test based on four indicators, namely, the government integrity index, tax revenue as a share of GDP, the number of days required for contract signing and the share of the population with higher education in the total population of China and ten ASEAN countries. The analysis in this paper will contribute to the understanding of the efficiency of the establishment of the China-ASEAN Free Trade Agreement area, which in turn will provide theory and experience for the establishment of more bilateral cooperation.

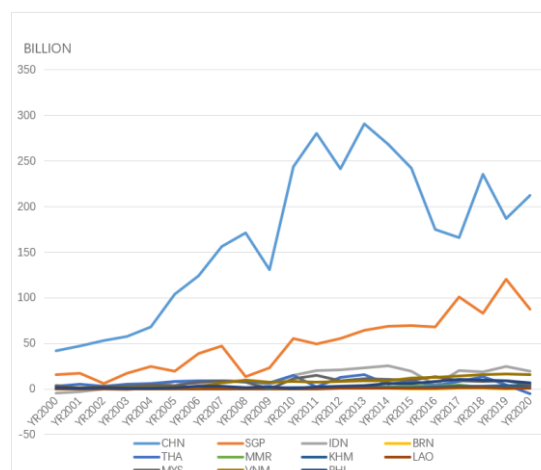


Figure 1. 2000-2020 CAFTA countris' net FDI Inflows.

Scholars' research on bilateral free trade areas is mainly based on the EU and North American Free Trade Area (NAFTA). Viner (1950) proposed the theory of customs union, which argues that two or more countries will promote the development of trade between customs union countries through trade creation effect, trade transfer effect, and trade expansion effect after the same customs border is established by signing an agreement [1]. Based on the theory of customs union, Kindleberger (1996) proposed the investment creation effect and investment transfer effect by examining the response of multinational corporations' FDI to EU trade, which provides a framework to guide the study of FTAs [2]. Baldwin et al (1995) found that the liberalization of EU trade has led to an increase in FDI inflows to its internal countries of 5% and above [3]. Neary (2002) suggests that countries that establish free trade zones to achieve inter-country tariff preferences promote increased FDI by extra-regional firms in order to obtain tax benefits [4]. Galgau et al (2004) concluded that the FTA of the EU has a stronger promotion effect on FDI in the EU member states [5]. Tekin-Koru (2010) studied the FDI promotion effect of NAFTA using DID model [6]. Bende-Nabende (1999) focuses on the heterogeneity of the role of FDI in the CAFTA, suggesting that the establishment of CAFTA has a stronger role in promoting FDI in member countries with a high degree of economic development, while there is even a reverse deterrent effect on FDI in member countries with a low degree of economic development [7].

After the establishment of the CAFTA, Chinese scholars attached great importance to it. Based on Kindberger's investment creation effect and investment transfer effect, Du Qunyang et al. (2004) argue that the investment creation effect is an important reason for the increase of direct investment in CAFTA by countries outside of CAFTA member countries [8]. Dong Yan (2006) believes that the establishment of CAFTA reduces both internal tariff and non-tariff barriers and promotes the growth of FDI because it will improve the market environment, terms of trade, and factor prices of member countries to make them have the locational factors to obtain FDI, which will lead to the increase of FDI in the FTA [9]. Based on Viner's theory of customs union, Zhao Yuhuan et al. (2011) analyzed the static effects of FDI and concluded that ASEAN and China do not have a competitive relationship in attracting FDI, and that economies of scale, prediction of policies and economic development are important for their introduction of FDI in dynamic effects. Among the studies on the promotion role of FTAs (ASEAN and China) on FDI, only Wang Zhanao (2013) and Tan Mi(2022) analyzed using the DID model and found that the China-ASEAN FTA has a positive promotion effect on the role of foreign investment in member countries[10-11]. However, there are some problems in this study, they analyzed the problems of the article. First of all, the establishment of China-ASEAN Free Trade Area was in 2010, while the time period chosen in this literature is 1980-2010, and the double difference method of event shock is only one year, so the conclusion of China-ASEAN Free Trade Area on the promotion of foreign direct investment has obvious chance, and there may be a lag effect of policy time on the role of foreign direct investment. Second, two developed countries, South Korea and

Japan, are chosen as the control group for China in this literature for robustness testing, but the obvious heterogeneity that exists between developed and developing countries makes it impossible to guarantee that the conclusions are robust. Third, the basic prerequisite for DID model, the parallel trend test, is not performed in the literature. Based on the above issues, Tan uses Asian countries with similar levels of economic development and culture to China for her study, and this paper continues to use her methodology for robustness testing.

Based on the existing literature, the possible marginal contributions of this paper might be, first, to use data from the World Bank for the CAFTA for the period 2000-2019 for the analysis, with a longer number of years of event shocks after the 2010 policy. Secondly, the analysis of the heterogeneous role of China-ASEAN FTA on FDI promotion is analyzed by starting from four dimensions: government cleanliness index, tax revenue as a share of GDP, number of days required for contract signing and share of tertiary education population in the total population, which completes the study.

2. Impact mechanism analysis and research hypothesis

The primary purpose of organizing a free trade area is to facilitate trade exchanges and economic cooperation within the trade area. As mentioned earlier, Viner believes that signing a free trade zone facilitates its trade creation and trade diversion role. And there is a relationship between international direct investment and international trade that will both substitute and complement each other at the same time. Therefore, FTA needs to exert simultaneous efforts on both international direct investment and international trade. CAFTA, through a series of agreements, both promotes trade in goods through tax preferences and develops trade in services by further opening up the domestic market. CAFTA has achieved tax preferences for nearly 7,000 products during the course of the agreement, and after the official establishment of the FTA in 2010, China and six major ASEAN countries achieved Zero tariff. In terms of liberalization of trade in services, specific progressive commitments to liberalize trade in services were also realized in batches in 2007, 2011 and 2015.

Therefore, the establishment of CAFTA will facilitate trade liberalization and investment liberalization, both of which will have a catalytic effect on FDI. Trade liberalization will drive FDI growth by attracting both internal and external firms to the FTA. Investment liberalization will contribute to the growth of FDI through more direct effects.

For foreign firms already located in the free trade zone, the significant reduction of trade barriers with neighboring countries will be more favorable for firms already located in the free trade zone to further expand their markets with neighboring countries, i.e., free trade parties, and these foreign firms will make additional investments and realize investment transfers. These companies will invest more in the free trade area than those outside the free trade area, which invest the same cost but have a significantly lower rate of return. For foreign firms that are not currently in the FTA, tax incentives and reduced non-tariff barriers reduce the transaction costs of foreign firms in the host country, making them very attractive and generating investment.

CAFTA's preferential policy in investment, on the one hand, because of the unified FDI policy, makes the legal provisions that countries need to pay attention to when investing in the FTA more consistent, greatly reducing the various risks caused by foreign enterprises when making direct investment because they do not understand the legal provisions of the host country. At the same time, the agreement of China-ASEAN Free Trade Area has agreed on specific agreements such as the most-favored-nation treatment, which is more common in FTA, so that foreign enterprises can obtain various policy preferences for their investments. Based on this, this paper proposes the following hypotheses.

Hypothesis 1: The establishment of CAFTA promotes the development of FDI in the FTA.

Because there are still gaps in ASEAN and China in terms of government transparency, taxation, higher education level and business environment, the more open and transparent a government's policy procedures are, the smaller the internal transaction costs of enterprises will be, and the more

inclined enterprises will be to invest in the host country; the lower the amount of taxes paid by enterprises, the more inclined enterprises will be to invest here; because ASEAN and China's technology level is still not high, the percentage of higher education level may not be significant in attracting foreign investment. The shorter the time for a country to fulfill the contract, the better the business environment and the higher the efficiency of the enterprises' operation, which will be more conducive to the rotation of capital. Based on this principal proposed hypothesis.

Hypothesis 2: The role of CAFTA for FDI will vary with different enterprises with different government cleanliness, tax weight, education level, business environment four factors, showing significant heterogeneity.

3. Modeling methods and variable construction

The measurement method used in this paper is the DID model. Its main role is to observe the changes in the explanatory variables before and after the experiment, and it is often used to test whether a policy produces a significant effect after its implementation. The main purpose is to observe whether the effect of the policy on the explanatory variable changes under different scenarios of enactment and non-enactment by creating a new framework that is inconsistent with the facts. We can divide the sample into an experimental group and a control group based on whether the policy occurred or not. The experimental group is the group that is subject to the effects of policy implementation, and the control group is the group that is not subject to the effects of policy implementation. Before the policy has been implemented, there is no significant difference between the two. After the policy has occurred, by comparing the changes in the explanatory variables directly in the control group pre-experimental group, we can get the actual size of the shock brought about by the policy occurrence. The most basic form of the double difference model is as follows.

$$y_{it} = \alpha + \gamma POST_{it} + \beta TREAT_{it} + \delta POST_{it} * TREAT_{it} + \varepsilon_{it} \quad (1)$$

The coefficient of δ the interaction term is the policy effect. In addition we can introduce other explanatory variables that have an impact on the interpretation of the explanatory variables. Where TREAT is a dummy variable for policy occurrence or not, taking the value of 1 if i is the experimental group and 0 if i is the control group; POST is a dummy variable for time, taking the value of 1 when the policy is implemented and later practiced, and 0 if it is before the policy occurs, and POST*TREAT is the interaction term between the policy dummy variable and the time dummy variable.

In this paper, the official launch of CAFTA is used as a quasi-natural experiment to examine the promotion effect of CAFTA establishment on attracting FDI in free trade zones. We select eleven countries that establish the China-ASEAN Free Trade Area as the experimental group, and Asian countries of the same continent other than this free trade area as the control group, and establish the specific model equation as follows.

$$\ln FDI_{it} = \alpha + \gamma POST_{it} + \beta TREAT_{it} + \delta DID_{it} + \mu_i + \nu_t + \varepsilon_{it} \quad (2)$$

$$DID_{it} = POST_{it} * TREAT_{it} \quad (3)$$

In equations (2) and (3), the $\ln FDI_{it}$ is the logarithm of FDI inflows for the control and experimental group countries. $POST_{it}$ is a dummy variable for time. Because January 1, 2010 is the official implementation date of the China-ASEAN free trade experiment, the year 2010 and beyond is made equal to 1, and the variable is equal to 0 for the year 2010 and onwards. $TREAT_{it}$ is the experimental group dummy variable, which is equal to 1 if a country is one of the China or ASEAN

countries, and takes the value of 0 if it is a country other than these 11 countries. The dummy variable takes the value of 0 if it is a country other than these 11 countries. s and m denote individual and time fixed effects, respectively, and are random perturbation terms. DID_{it} is the cross product of $POST_{it}$ and $TREAT_{it}$ and is the core variable in the DID, whose coefficient can be used to account for the growth rate of FDI brought about by the establishment of the China-ASEAN Economic FTA. The following table shows the descriptive statistics of the explanatory variables and explanatory variables in this paper.

Table 1. Descriptive statistics of each variable

Variable	Mean	Std.Dev	Min	Max
lnFDI	26.42	0.0757	26.36	27.09
LnGDP	24.63	2.406	0	30.29
GDPR	5.289	5.039	-36.66	53.38
TRADE	71.86	44.40	17.20	343.5

All data for conducting DID in this paper are obtained from the World Bank database, and the logarithm of net FDI inflows from the World Bank from 2000-2019 is used to represent the number of FDI. Since there are positive and negative net inflows, all FDI in this paper is logarithmic after adding the maximum value of net FDI inflows. The control variables in this paper include the measure of economic development level of each country (logarithm of GDP), the economic growth energy of each country (GDPR), and the faster the GDP growth rate, the more investment opportunities for foreign enterprises. The third control variable is the foreign trade dependence (TRADE), the higher the foreign trade dependence, the more open the country is and the more attractive it is for foreign investment.

4. Analysis of empirical results

4.1 Regression results

To examine the impact of CAFTA establishment on FDI, one can use equation (2) above. We are interested in the cross-products of $POST_{it}$ and $TREAT_{it}$. The specific measures under the DID approach are presented below.

Table 2. Regression results of DID

Variable	Regression results.
DID	0.0435*** (0.0154)
LnGDP	0.0162*** (0.00183)
GDPR	0.00133*** (0.000434)
TRADE	8.25e-06 (6.71e-05)
TREAT	0.0149** (0.00717)
POST	-0.00583** (0.00289)
CONSTANT	26.01*** (0.0432)
Observation	889

Note: Robust standard errors are in parentheses, ***, ** and * denote significance levels at 1%, 5% and 10%, respectively

As shown in Table.2., the regression coefficient of the cross product term is 0.0435, which passes the test of significance of 1%, indicating that the establishment of China-ASEAN has a catalytic effect on FDI in member countries. From the regression results, it is known that $\ln GDP$ has a promoting effect on the growth of FDI, and each growth of $\ln GDP$ will lead to 0.0162% growth of FDI, and the economic growth rate (GDPR) has a positive promoting effect on the growth of FDI, and each 1% growth of GDPR will lead to 0.00133% growth of FDI, and TRADE is not significant.

4.2 Parallel trend test

The plausibility of the empirical results of DID requires a parallel trend test. Although the coefficient of the cross-product DID is significantly positive, indicating that the establishment of the China-ASEAN FTA has contributed to the increase of FDI within the member countries. However, this does not indicate that our estimate of the policy is accurate. Because the basic premise of double difference implementation requires that the trend of the experimental group before the policy is consistent with the trend of the control group, the cross product term DID is meaningful only if the experimental and control groups pass the parallel trend test. In this paper, we use the dynamic effects test to observe the parallel trend of DID as shown in Figure 2.

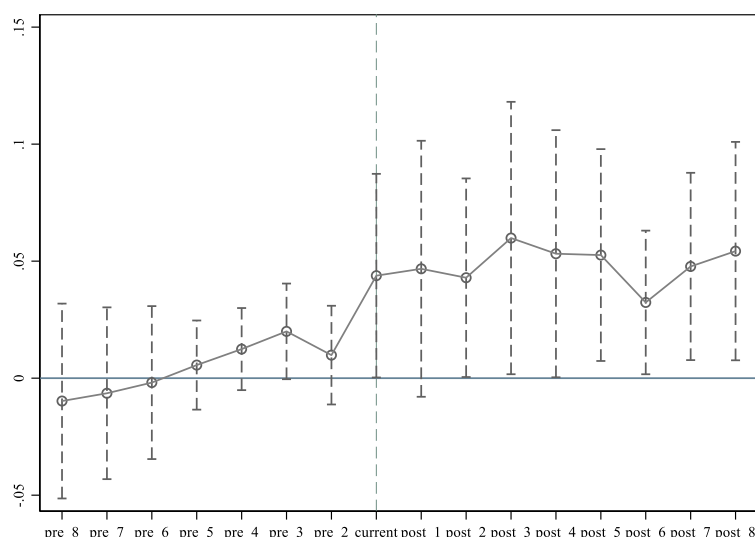


Figure 2. Dynamic effects test (parallel trend test)

Our parallel trend test examines whether the cross-multiplication term is significant by introducing a time dummy variable and cross-multiplying it with a policy dummy variable. The dynamic effects test is somewhat different from the ordinary parallel trend test. The parallel trend test simply examines whether the cross product term is significant before the policy occurs, and if the result is not significant it means that there is no significant difference between the experimental group and the control group before the policy occurs. The dynamic effects test should not only look at whether the cross product term is significant before the policy occurs, but also focus on the difference between the groups after the policy occurs. If the cross product term is still significant after the occurrence of the policy and after the occurrence of the policy, it means that the measure or time has a certain continuity effect. However, when we analyze the parallel trend test of DID we are most concerned with whether the policy is significant before it occurs, as long as it is not significant, whether the subsequent cross-products are significant or not does not affect our judgment of the final result. As shown in Figure 2, the vertical short dashed line with a cover is the 95% confidence interval of the regression coefficient of the cross product term for each period and the policy dummy variable, if the coefficient = 0 falls in the 95% confidence interval, it means that the cross product term DID is not significant, if the 95% confidence interval does not include the coefficient = 0, it means that the cross

product term DID is significant and there is a significant difference between the experimental group and the control group. In this paper, using 2010 as the current, 2003 as the starting year and 2018 as the termination year, the graph shows that all periods are not significant before the formal establishment of China-ASEAN FTA, and after the policy implementation, the cross product term DID is significant in the subsequent 8 years except the first year which is still significant. This indicates that the establishment of China-ASEAN FTA has a certain continuity and also a time lag. Since all the periods before the policy implementation are not significant, the premise of this DID model has passed the parallel trend test.

4.3 Robustness test

Placebo test. This paper draws on the placebo test method of Cai et al (2016) for the interaction term DID randomly selected 500 times, and the sample of this paper includes Asian countries except North Korea, Syria and Palestine, which have more missing data, and there are 45 Asian countries in total as the study sample of this paper [13]. Except for the 11 countries in the China-ASEAN FTA, there are the remaining 34 countries as the control group. In this placebo test, 11 countries were randomly selected from 45 countries as "pseudo" CAFTA members, and then the "pseudo" cross product DID was constructed to participate in the regression. Because the cross multiplier is randomly generated, it does not have a significant impact on FDI inflows. In other words, the coefficient of the "pseudo" regression under the placebo test is likely not to deviate from zero as long as there is no significant omitted variable bias in the regression (Tan Mi, 2022). In this paper, 500 regressions were conducted to avoid the interference of small probability time occurrence on the regression. The kernel density and P-value distributions of the double difference model obtained from the regression results generated by the 500 random regressions can be seen in Figure 4. From the previous analysis of the regression results, it is known that the actual estimated coefficient of the double difference is 0.04 which is an obvious outlier in this placebo test, so the estimation results of this paper are not biased due to the omission of variables that cause bias in the results.

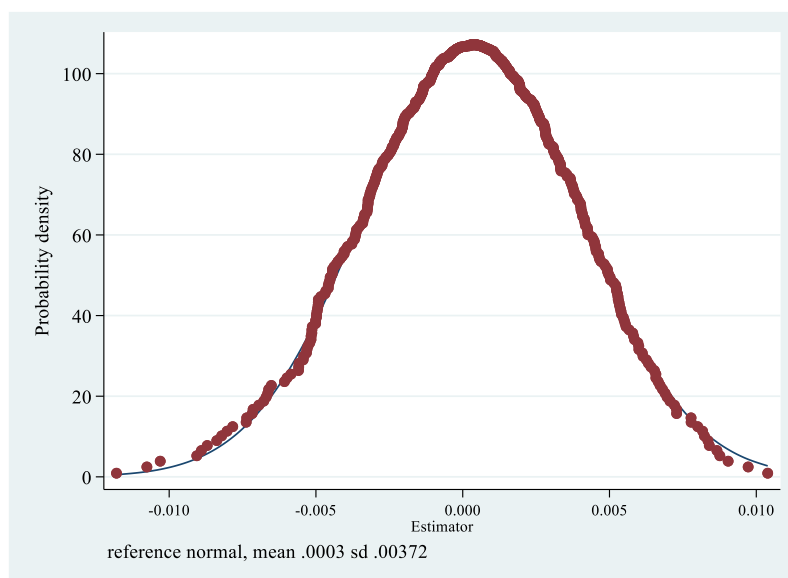


Figure 3. Kernel density and p-value of the cross product term

Narrowing the sample interval. The current sample interval of this paper is 2000-2019, and in the consideration of robustness this paper narrows the time period to 2003-2018, still 11 of the 45 Asian countries (China and 10 ASEAN countries) are used as the experimental group, and the other countries are still used as the control group, and the final measurement results are obtained by double-differencing again, and the results are still robust after narrowing the sample interval as shown in Table. 3.

Table 3. Robustness tests with reduced sample intervals

Variable	Regression results.
DID	0.0386**
	(0.0172)
LnGDP	0.0175***
	(0.00216)
GDPR	0.00129***
	(0.000474)
TRADE	-1.47e-05
	(7.84e-05)
TREAT	0.0195**
	(0.00965)
POST	-0.00723**
	(0.00331)
CONSTANT	25.98***
	(0.0511)
Observation	719

Note: Robust standard errors are in parentheses, ***, ** and * denote significance levels at 1%, 5% and 10%, respectively

4.4 Heterogeneity test

Based on the investment environment of FDI, it is clear that there are various conditions that need to be met in order to achieve FDI, and there are also high requirements for the social environment. The following is an analysis of the impact of the establishment of the China-ASEAN Free Trade Area on FDI based on the differences in the social environment of different countries.

The degree of integrity and fairness of a country's government greatly influences the decision of foreign firms to invest in the host country. Referring to Tan Mi et al. (2022), in this paper, we grouped 45 countries in Asia using the Global Corruption Perception Index (CPI) data from Transparency International, a world-renowned NGO that studies government corruption, and averaged the CPI data from 2012 to 2020. The results are shown in Table.4., which shows that the double difference interaction term of the cleaner countries is significant at the 1% level of significance with a coefficient of 0.0928. The attraction of outward investment is much higher than that of more corrupt countries, which is consistent with the fact.

Table 4. Heterogeneity test for global cleanliness index classification

Variable	high cleanliness index	low cleanliness index
DID	0.0928***	0.0147***
	(0.0312)	(0.00275)
LnGDP	0.0185***	0.00387***
	(0.00190)	(0.000358)
GDPR	0.00443***	4.64e-05
	(0.000984)	(7.06e-05)
TRADE	-0.000362***	6.78e-05***
	(9.74e-05)	(2.11e-05)
TREAT	0.0882***	-0.00192
	(0.0168)	(0.00122)
POST	0.00227	-0.00234**
	(0.00474)	(0.00107)
CONSTANT	25.96***	26.31***

	(0.0487)	(0.00839)
Observation	437	452

Note: Robust standard errors are in parentheses, ***, ** and * denote significance levels at 1%, 5% and 10%, respectively

When the tax burden of a country is too high, it may affect the choice of foreign investors for investment. This paper groups 45 countries in Asia based on the average of tax-to-GDP ratio from 2000-2019 in the World Bank database. As shown in Table 5., the cross product coefficient for countries with a high tax-to-GDP ratio is 0.0693, which passes the significance test at the 1% level, while the cross product coefficient for the group with a lower tax-to-GDP ratio is 0.0654, which passes the significance test at the 5% level. There are a large number of missing data for nine countries, including Yemen, Qatar, Pakistan, Japan, Brunei, Laos, Oman, Vietnam, and Kuwait. Also, there are many types of taxes, and grouping them only by total taxes as a share of GDP may be biased. The way to conduct robustness tests of China-ASEAN FTA using taxation as a classification still needs further refinement and clarification.

Table 5. Heterogeneity test of the tax-to-GDP division

Variable	high tax to gdp ratio	low tax to gdp ratio
DID	0.0693*** (0.0165)	0.0654** (0.0282)
LnGDP	0.00667*** (0.000639)	0.0289*** (0.00355)
GDPR	-0.00116** (0.000495)	0.00232** (0.00102)
TRADE	0.000447*** (6.81e-05)	2.21e-05 (7.94e-05)
TREAT	-0.0502*** (0.00951)	0.0148 (0.0121)
POST	0.00173 (0.00352)	-0.0205*** (0.00680)
CONSTANT	26.23*** (0.0176)	25.69*** (0.0893)
Observation	336	337

Note: Robust standard errors are in parentheses, ***, ** and * denote significance levels at 1%, 5% and 10%, respectively

The efficiency of a country's contract performance will affect the ease of foreign enterprises to invest and trade in that country, and if the time to perform the contract is too long, it will bring too much risk to foreign enterprises, and foreign enterprises will be reluctant to invest. In this paper, we choose data from the World Bank to reflect the efficiency of a country's contract implementation in terms of the specific number of days that the contract is fulfilled. Since this data is missing for Turkmenistan, this paper chooses the remaining 44 countries as a group to conduct regressions and concludes that the establishment of China-ASEAN FTA in countries with long contracting time will promote the development of FDI more. Before a country signed the China-ASEAN Free Trade Area, foreign investors are reluctant to invest due to risk reduction because of the long contract signing days in the country. After the signing of China-ASEAN FTA, more foreign companies go to the host country to invest because of the unified terms and trade policy support. So for countries with longer days to fulfill the contract, the logarithm of net FDI inflows will increase by 0.0717% for every 1% increase in the cross product term of double difference, and it is significant at 1% level of significance. In contrast, the signing of China-ASEAN FTA is not a significant boost to FDI for countries that are already efficient in signing contracts.

Table 6. Heterogeneity test for the division of the number of days to perform the contract

Variable	long contract performance days	short contract performance days
DID	0.0717***	-0.00557
	(0.0225)	(0.00365)
LnGDP	0.0181***	0.00733***
	(0.00213)	(0.00103)
GDPR	0.00279***	-0.000158
	(0.000963)	(0.000317)
TRADE	-0.000124	-0.000164***
	(0.000100)	(5.22e-05)
TREAT	0.0283**	-0.00156
	(0.0117)	(0.00200)
POST	-0.00840*	0.00133
	(0.00447)	(0.00329)
CONSTANT	25.96***	26.24***
	(0.0516)	(0.0246)
Observation	438	431

Note: Robust standard errors are in parentheses, ***, ** and * denote significance levels at 1%, 5% and 10%, respectively

A country's higher education enrollment rate can reflect the quality of a country's population, which is measured in this paper after averaging the average of the data published by the World Bank on the share of higher education enrollment in the total number of people from 2000-2019, grouping 44 countries (data for Lebanon is missing). The results obtained are shown in Table.7.: for countries with higher higher higher education enrollment, the establishment of the China-ASEAN Free Trade Area is more conducive to promote their FDI growth. For each 1% increase in the cross product of the double difference for the 22 countries with higher enrollment in higher education, the FDI boost is stronger for the 22 countries. For the 22 countries with lower enrollment in higher education, the FDI increases by 0.0105% for every 1% increase in the cross product of the double difference. It is clear that the establishment of China-ASEAN is more conducive to the increase of FDI for countries that value higher education development and have high quality population.

Table 7. Heterogeneity test in the classification of higher education enrollment

Variable	High enrollment in higher education	Low enrollment in higher education
DID	0.0717***	-0.00557
	(0.0225)	(0.00365)
LnGDP	0.0181***	0.00733***
	(0.00213)	(0.00103)
GDPR	0.00279***	-0.000158
	(0.000963)	(0.000317)
TRADE	-0.000124	-0.000164***
	(0.000100)	(5.22e-05)
TREAT	0.0283**	-0.00156
	(0.0117)	(0.00200)
POST	-0.00840*	0.00133
	(0.00447)	(0.00329)
CONSTANT	25.96***	26.24***
	(0.0516)	(0.0246)
Observation	438	431

Note: Robust standard errors are in parentheses, ***, ** and * denote significance levels at 1%, 5% and 10%, respectively

In summary, this paper tested the heterogeneity of Asian countries based on the cleanliness of government, tax share, efficiency of contracting, and higher education enrollment by subjecting them to a heterogeneity test. From the above tests, it can be seen that the higher a country's cleanliness and higher higher education enrollment rate, the more significant the promotion effect of the establishment of China-ASEAN FTA on its FDI. For a country with a high tax share and an inefficient degree of contracting, the establishment of the China-ASEAN Free Trade Area will greatly promote the growth of FDI in that country.

5. Conclusions and policy recommendations

This paper measures the contribution of CAFTA to FDI using the net foreign investment inflow, GDP level, GDP growth rate, and trade index provided by the World Bank. The heterogeneity test is also conducted using the World Bank's indicators such as tax revenue as a share of GDP, the number of days it takes to sign a contract, higher education enrollment rate, and the NGO Transparency International's examination of the level of government corruption, and the following conclusions are drawn: (1) The effect of the establishment of the China-ASEAN FTA on FDI is consistent with the parallel trend test, and can use the the econometric model of double difference method. (2) According to the double difference method, the establishment of China-ASEAN FTA promotes the increase of FDI, and the robustness of this finding is verified by both placebo test and narrowing the sample interval (3) During the heterogeneity test, we find that the establishment of China-ASEAN FTA has a positive effect on the establishment of FDI in countries with clean government and FDI promotion effect is significantly higher for countries with high higher education enrollment than for countries with corrupt government and low higher education enrollment. For countries with slow contract signing efficiency and high tax share, the China-ASEAN FTA is instead more conducive to FDI development as it makes the level of convergence between allied countries in terms of tariff reduction and efficiency.

Since the establishment of China-ASEAN Free Trade Area, both FDI and OFDI have increased significantly in each country, and this paper demonstrates the promotion effect of China-ASEAN Free Trade Area on FDI using double difference method. We should fully understand the important role of international, i.e., free trade areas between two countries or economies, in terms of economic growth, trade opening, and attracting foreign investment in a country. Therefore, we should further strengthen cooperation with neighboring countries, with cultural and economic spheres, and international parts of friendly countries, and promote the successful experience of CAFTA.

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