

Research on the Formation Mechanism and Influencing Factors of Competition Policy in RTAs

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Abstract

The competition policy provisions in regional trade agreements are intended to safeguard market competition environment, protect market competition interests and promote international economic cooperation. However, due to the difference in economic size and market development, there are differences in competition policy among regional trade agreements. Using the Deep-trade-agreement database published by the World Bank, this paper empirically tests the formation mechanism and influencing factors of the signing and enforcement effect of competition policy provisions in regional trade agreements from 1996 to 2015 by analyzing the level and depth of competition policy provisions. The empirical results show that: the two countries' technology similarity, institutional quality and foreign direct investment have significant effects on the signing of competition policy provisions and the effect of law enforcement, and the effect is more significant in the south-north model than in the south-south model.

Keywords

Regional Trade Agreement, Competition Policy, Depth Level of Provisions

1. Introduction

Regional trade agreement (RTA) refers to a series of preferential trade terms signed between two or more countries or different customs regions. The purpose of RTA is to reduce or eliminate trade barriers between member countries, enhance trade facilitation and promote regional trade cooperation. Since 1990, the number of RTAs has increased dramatically. The total volume of trade in goods and services has increased every year, and the cumulative number of effective RTAs has also shown an upward trend (see **Figure 1**). And the content of RTAs

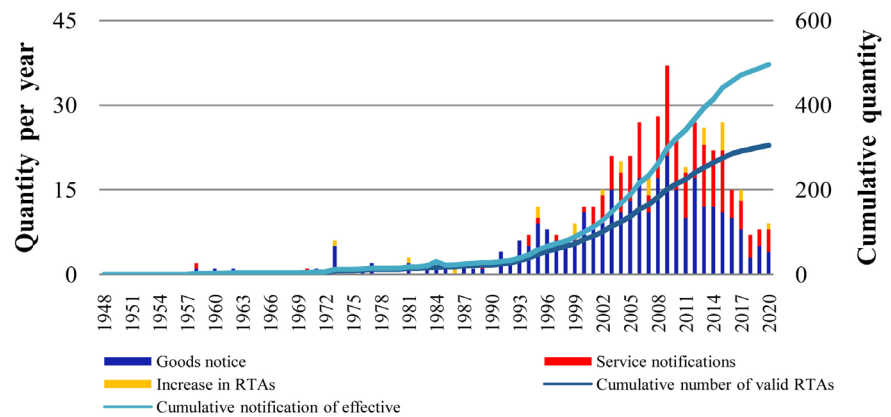


Figure 1. The development process of global RTAs from 1948 to 2020. Sources: WTO-regional trade agreements database.

has gradually shifted from traditional trade areas such as tariff reduction to new trade rules such as competition policy, intellectual property rights and service trade (Wen, 2018).

At the beginning of the 21st century, WTO discussed the issue of competition policy, but it failed to get further development in the framework of WTO. In recent years, many countries have sought a fairer competitive market trade environment through regional trade cooperation, so RTAs marked by new issues such as competition policy have achieved vigorous development. As of September 2020, 40.7% of RTAs contain competition policy chapters.

According to the [World Trade Organization \(2018\)](#), the competition policy in regional trade plays an important role in maintaining good competition order, realizing free trade, realizing the goal of trade agreement and promoting international cooperation. These competition policy provisions mainly include the formulation of relevant laws to promote market competition, the establishment of supervision agencies, and the government's restrictions on some enterprise behaviors. However, with the further development of economic globalization and the new round of negotiations on international economic and trade governance rules, the degree of development and market competition of various countries are different, and competition policies also show great differences in RTAs (Li & Mao, 2018). Europe is far ahead in both intra-regional and overall RTA signing, while West Asia is the least (see [Figure 2](#)). From a global perspective, the RTA covering competition policy has been in force. Developed countries and developing countries have signed the largest proportion of RTAs covering competition policy (see [Figure 3](#)). Developed countries hope to protect their interests in regional competition through RTAs, while developing countries hope to obtain fair market competition through RTAs. In this context, it is of great significance to explore the formation mechanism and influencing factors of competition policy provisions in RTAs. On the one hand, exploring the factors that influence the signing and entry into force of competition policy provisions will help to deepen the theoretical explanation of the new high standard rules of RTAs. At the same time, it can provide policy reference for developing countries'

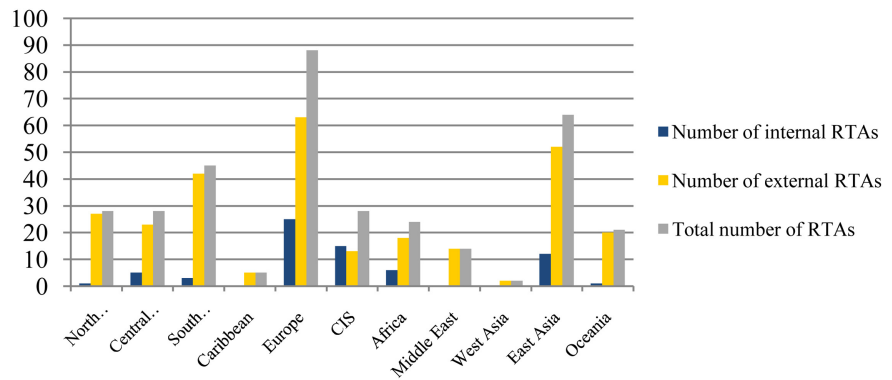


Figure 2. Regional distribution of global RTA covering competition policy. Sources: WTO-regional trade agreements database.

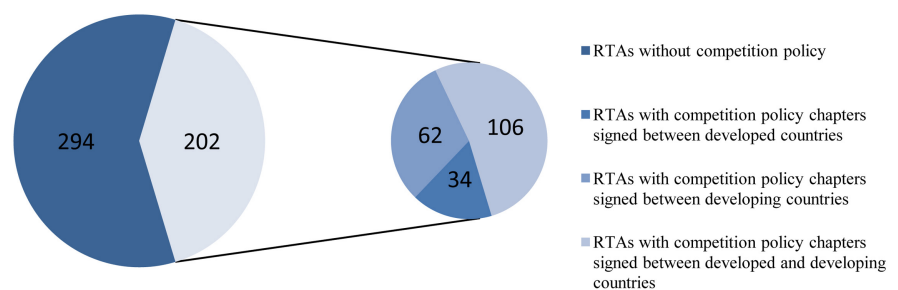


Figure 3. The proportion of different types of economies in the competition policy provisions of the effective RTA. Sources: WTO-regional trade agreements database. Note: there are 202 RTAs including competition section.

strategic choice and negotiation strategy in RTAs. Developing countries have gradually become an indispensable subject in the field of international economy and trade. This paper further studies the influence factors and effects of the formation of competition clauses in RTAs under the “south-south” and “south-north” modes, which reflects the innovation of this paper.

2. Theoretical Framework and Research Hypothesis

At present, many scholars focus on the role of RTAs in the global trade system. With the deepening of economic globalization, global economies have participated in all aspects of the global division of production, and are generally embedded in the global value chain. In this context, *Ruta (2017)* believes that the deepening of GVC trade will promote the deepening of RTA. *Yang et al. (2020)* believe that various provisions of RTAs have deeply reduced the transaction costs of international division of labor, extended the transnational production chain, and promoted the value-added trade correlation between economies. *Lu & Zhang (2020)* further studies found that there is a positive relationship between the two. According to the research on the influencing factors of RTAs, *Baier & Bergstrand (2004)* concluded that geographical distance, economic scale and capital between the two countries will affect the signing of bilateral RTAs. The competition policy in RTAs can effectively promote the production activi-

ties among countries (Lawrence, 2000), and there is a significant trade promotion effect (Hayakawa et al., 2014). The improvement of its level and depth also promotes the increase of FDI flow (Lin & Zhang 2019). Zheng (2019) believes that most scholars regard whether to sign RTA competition policy as a control variable, and directly substitute it into the empirical calculation to calculate the degree of its impact on international economic activities. This will ignore the difference of the impact of the depth of competition policy in different types of RTA, leading to the deviation of the results. Taking competition policy in RTAs as an example, this paper introduces the level and depth of the competition policy provision, and discusses the formation process in the process of signing RTAs, which helps to clarify the attitude and position of competition cooperation among countries with different development levels, and provides a reference for the negotiation of high standard rules of interregional and multilateral trade.

The signing and entry into force of specific provisions in RTAs will be affected by the level of science and technology, the degree of economic development, the differences of political and cultural systems and regional factors among countries (Lang & Yin, 2009). This paper will explore the formation mechanism of competition policy from the following three aspects, especially the differences in the depth level of competition policy signing.

1) Economic factors

In the current global production network of global division of labor, the trade relations between countries are becoming more and more complex. It is more and more difficult to coordinate trade disputes such as market competition and government subsidies only by the existing WTO rules. Economies with higher level of economic development are more inclined to add specific provisions in bilateral and RTAs to further regulate fair market competition, and economies with different levels of economic development will have different attitudes when facing the market environment of fair competition.

Therefore, hypothesis 1 is put forward: when the two economies sign the competition policy provisions of the RTA, the difference in the degree of economic development will affect the signing of the provisions and the degree of legal enforcement.

2) Investment factors

According to the *World Investment Report 2013*, the trade between multinational companies accounts for nearly 80% of the global trade, mainly through the formation of value-added trade in the form of intra enterprise transactions, market supply and demand. Pang (2017) found that the growth of the number of RTAs is synchronized with the development of international direct investment. In the face of the expanding interregional trade, different economies have different foreign investment attraction and different ability to open other countries' markets, which will inevitably have different requirements on the trade market, and thus affect the depth of competition policy; on the contrary, the host country's market development potential and business environment will further de-

termine the attractiveness of foreign investment, and further affect the signing and depth of the competition policy provisions between the two sides (Yang, Meng, Wang, & Li, 2016).

Therefore, hypothesis 2 is put forward: when the two economies sign the competition policy provisions of the RTA, the gap of FDI will affect the signing of the provisions and the degree of legal enforcement.

3) Market factors

Interest groups play an active role in the expression of collective interests and assisting the government in decision-making. However, with the development of democratic politics in various countries, their negative effects are increasingly apparent. Among them, unfair competition is an important reason for the lobbying phenomenon of interest groups to damage the market economic order. The international economics of “social contract theory” holds that the government is nonneutral. Good institutional quality can stabilize the domestic economic order and have a say in the face of international trade disputes.

Therefore, hypothesis 3 is put forward: when two economies sign competition policy provisions of the RTA, the quality of the system will affect the signing of the provisions and the degree of their legal enforcement.

3. Model Setting and Data Specification

3.1. Model Setting and Estimation Method

This paper focuses on the factors that affect the level and depth of competition policy provisions in RTAs, the equation is set as follows:

$$CP_{ijt} = \alpha_0 + \alpha_1 W_{ijt} + Z_{ij} \beta + \varepsilon_{ijt} \quad (1)$$

In the above formula, bilateral countries are represented by i and j , and t is the annual time, CP_{ijt} refers to the horizontal depth of competition policy provisions in the RTAs. Variable W_{ijt} denotes the explained variable, including technical similarity, bilateral FDI flow and institutional quality variable. Variable Z_{ij} denotes the controlling variable, includes the geographical distance between the main cities of the two countries, whether the two countries have a common language and the common colonial relationship. β denotes the corresponding regression coefficient vector and ε_{ijt} denotes the error term.

3.2. Variable Selection and Data Source

1) Explained variable

The explained variable is the level and depth of competition policy when bilateral countries sign RTA. This paper uses the Deep-trade-agreement data of the World Bank, which reports the level and depth of specific provisions under the “WTO+” and “WTO-X” provisions of all countries that have signed free trade agreements up to 2015. WTO Deep-trade-agreement divides the contents of RTAs into four types: “WTO+AC”, “WTO+LE”, “WTO-X AC” and “WTO-X LE”. “WTO+” refers to the clauses already covered in the WTO, such as tariff reduction of industrial and agricultural products, opening of service trade, etc.

“WTO-X” refers to the clauses not included in the WTO, or the issues beyond the WTO mandate (Horn et al., 2010), such as labor standards, environmental rules, competition policy, etc. Under the “WTO-X” clause, “WTO-X AC” indicates whether the provisions come into effect, “WTO-X LE” refers to the “WTO-X” clauses with stronger legal enforcement, that is, these clauses can be subject to the jurisdiction of the dispute settlement mechanism. On the whole, the “WTO-X” rules are more extensive than the “WTO+” rules. Generally speaking, the RTAs dominated by developed countries pay more attention to the contents of the “WTO-X” clauses, while the developing countries have relatively weak acceptance of the “WTO-X” clauses.

The field of “WTO-X” has become an important indicator to explore the depth of the provisions of RTAs. This paper takes the depth of competition policy in “WTO-X AC” and “WTO-X LE” as the explained variable. The specific explanations of the relevant “WTO-X” provisions applied in this paper are as follows (see Table 1).

2) Explanatory variables

a) Technical similarity (tsim). The depth of competition policy will be affected by the degree of economic development among countries. This paper calculates the technical similarity between the two countries by the following methods:

$$tsim = \ln(sh_{it}(1 - sh_{it})) = \ln\left(\frac{gdppc_{it} * gdppc_{jt}}{(gdppc_{it} + gdppc_{jt})^2}\right), \quad sh_{it} = \frac{gdppc_{it}}{gdppc_{it} + gdppc_{jt}}$$

In the above equation, variable $gdppc_{it}, gdppc_{jt}$ means GDP per capita of economies i and j at 2020 prices (in US dollars). The data of the above variables are from the United Nations Conference on Trade and Development (UNCTAD) database.

b) Institution quality (IQ). This paper uses the following five indexes as proxy variables of a country’s overall institutional quality. They are regulatory quality, rule of law, government effectiveness, political stability and absence of violence, voice and accountability. Variables are marked as IQ_i, IQ_j , the variables of institutional quality gap are recorded as $IQ_{gap} = |WGI_i - WGI_j|$. The data comes from the World Governance Indicators (WGI) released by the World Bank.

Table 1. Content description of “WTO-X” field clause.

Clause	Connotation	Explanation of clause variables
WTO-X AC	Whether the clause is in force or not	“0” means if the provision is not mentioned (or too generally mentioned) in the agreement
		“1” means if the provision is mentioned in the agreement
WTO-X LE	The degree of legal enforcement	“0” means if the provision is not mentioned in the agreement or not legally enforceable
		“1” means if the provision is mentioned, legally enforceable but explicitly excluded by dispute settlement provision
		“2” means if the provision is mentioned and legally enforceable

Sources: WTO-Deep trade agreement database.

c) The gap between bilateral FDI inflows and outflows. Take a country's overall inflow and outflow of FDI in the world to study, in general, logarithmic transformation is needed to reduce the deviation of sample distribution. However, the direct logarithmic transformation of FDI data will result in the missing of some zero value and negative value data, which will lead to the selection deviation of sample data. Therefore, this paper adopts the general practice of subtracting the inflow and outflow of FDI from bilateral countries and then taking the average value. It not only retains the zero value of FDI flow and the negative value of reverse or divestment of FDI, but also illustrates the contrast of FDI flows between bilateral countries. The variables are recorded as $FDIIN_{gap}$, $FDIOUT_{gap}$. The data comes from the OECD's international investment statistics database.

3) Control variables

Referring to CEPII's GEODIST database, this paper selects the following factors as the control variables: a) The geographical distance of the main cities between the two countries, taking the reciprocal first and then the logarithm, the variable is recorded as *dist*. b) Calculated the relative value of the distance between the two countries by taking the population distribution at the city level within a country as the weight, the variable is recorded as *distw*. c) If the two countries share the same language, common boundary and colonial relationship, the corresponding variables are assigned as "1", otherwise they are "0". The variables are recorded as *comlang*, *contig* and *colony*.

This paper tries to choose more countries and a longer time span, and according to the method proposed by Zhang (2019), the inter organizational RTA is split into bilateral inter country data. However, considering the integrity of the data collection, the data on institutional quality variables in the WGI database have only been recorded since 1996, and the Deep-trade-agreement data in the World Bank has been up to 2015, the time span of text sample data is 1996-2015. And because the data in the control variables are from the GEODIST database, which does not involve the data between "Lichtenstein", "Iceland", "Bulgaria" and "Latvian", because these four countries have little effect on the overall effect of this paper, so we directly exclude and get the final data needed in this paper. Therefore, this paper empirically analyzes 1039 groups of effective sample data. The following is a descriptive statistics of 1039 effective samples (see Table 2).

4. Empirical Analysis and Results

4.1. Benchmark Regression

Firstly, this paper regresses the benchmark model. Table 3 shows the regression results of the influencing factors of the level and depth of competition policy provisions in RTAs. Columns (1)-(4) are the regression results of the effectiveness of competition policy provisions in RTAs. Columns (5)-(8) are the regression results of the effective degree of competition policy provisions in RTAs. Among these lists, Columns (1)-(3), (5)-(7) are the regression results of three

Table 2. Variable description and descriptive statistics.

Variable name	Data source	Mean	Standard deviation	Minimum	Maximum
tsim	UNCTAD	-2.1841	0.6653	-4.4691	-1.3863
fdiingap	OECD	0.2872	0.5683	0	7.2391
fdioutgap	OECD	0.3507	0.6545	0	5.9585
iqi	World Bank	0.9956	0.7318	-1.7495	1.8727
iqj	World Bank	0.0639	0.6984	-1.4357	1.7752
Indist	CEPII	-8.0119	1.0188	-9.8564	-4.0879
distw	CEPII	4.8123	4.5928	0.1622	18.8845
comlang	CEPII	0.1242	0.3299	0	1
contig	CEPII	0.051	0.2201	0	1
colony	CEPII	0.0375	0.1902	0	1

Table 3. Analysis of the influence of RTAs on the signing and effectiveness of competition policy provisions.

	Competition-ac				Competition-le			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
tsim	0.567*** (0.068)			0.593*** (0.092)	0.548*** (0.065)			0.680*** (0.088)
fdiingap		-0.512*** (0.143)		-0.400* (0.171)		-0.689*** (0.144)		-0.581*** (0.167)
fdioutgap		0.537*** (0.141)		0.242* (0.167)		0.749*** (0.145)		0.570*** (0.166)
iqi			0.421*** (0.066)	0.758*** (0.086)			0.588*** (0.060)	0.829*** (0.079)
iqj			1.071*** (0.095)	1.250*** (0.115)			0.551*** (0.068)	0.596*** (0.089)
Indist				1.043*** (0.185)				0.936*** (0.163)
distw				0.117*** (0.033)				0.098** (0.030)
comlang				-0.257 (0.170)				-0.833*** (0.153)
contig				-0.417 (0.305)				-0.353* (0.291)
colony				0.610 (0.325)				0.975** (0.316)
cons	2.252*** (0.166)	0.924*** (0.052)	0.773*** (0.079)	9.970*** (1.358)	2.059*** (0.157)	0.775*** (0.050)	0.337*** (0.068)	8.963*** (1.191)
N	1039	1039	1039	1039	1039	1039	1039	1039

a. Sample of a table footnote standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

main explanatory variables, and column (4), (8) is the regression results of all explanatory variables and control variables. The results show that economy, investment and market all significantly affect the signing and effectiveness of competition policy provisions in RTAs, and the coefficient of each variable are significant at the level of 1%.

In the economic variables, the variable coefficient sign of technology similarity (tsim) is positive, which indicates that the more similar the degree of technological development between the two countries, the more conducive to the signing of the competition policy provisions of the RTA, and the higher the legal effect of the provisions. Similar economic scale means similar factor endowment and demand, and both sides will be more inclined to the market environment of fair competition.

FDI inflow gap and FDI Outflow gap have different effects on the level and depth of competition policy provisions in RTAs. The difference coefficient of FDI outflow is significantly positive, which indicates that the larger the gap between the two countries, the more conducive to the signing of competition policy in RTAs, the stronger the legal effect of the policy provisions. Countries with large FDI outflows want to enter more overseas markets. Countries with small FDI outflows are more inclined to open their markets because of their weak capital strength, and bilateral countries are more inclined to explicitly mention the terms to build a fairer competition environment. The difference coefficient of FDI inflow is significantly negative, which indicates that the larger the FDI gap between the two countries, the less they want to sign the terms of competition policy. Due to the different attractiveness of the two countries' markets to foreign investment, the competition basis of potential markets is different, and the market with weak internal competition does not want to bring more fair competition.

The variable coefficient sign of the institutional quality (IQ) is positive, which indicates that the higher the institutional quality of a country is, the more favorable it is for the signing and effectiveness of the competition policy provisions of its RTAs. Higher system quality will give full play to the efficiency brought by the market system, gradually form a competitive market, eliminate free trade barriers, etc. National political stability and legal rules will bring a good operating environment for foreign investment. In the face of market problems, the government is efficient and has a good regulatory system, and has more say in the face of international disputes.

Among the above regression control variables, the regression result of distance variable is significant and the coefficient is positive, which means that the farther the distance between the two countries is, the more conducive it is to promote the signing of competition policies in RTAs. The two countries tend to use specific legal provisions to conduct trade behavior between competitive markets, and they are more willing to have stronger legal effect to promote market competition. The regression coefficient of common language and border

between the two countries is negative, and the regression coefficient of colonial relationship between the two countries is positive, but it is not statistically significant in column (4), which indicates that the two countries have no obvious influence on the competition policy provisions of RTAs. In column (8), it is obvious that if the two countries share the same language and border, the market trade of the two countries is relatively free, and there is no need to have more mandatory laws to restrain the market behavior, and the law enforcement of the competition policy provisions will be weak. If the two countries have colonial relations, the colonial countries need to have mandatory legal policies to ensure fair competition in trade, the higher the legal effect of their competition policies will be.

4.2. Heterogeneity Test

With the development of world economic globalization, developing countries have gradually become indispensable subjects in the field of international trade and economic cooperation in recent years. The signing of Regional Comprehensive Economic Partnership (RCEP) on November 15, 2020 marks the formal conclusion of the largest free trade agreement in the world. RCEP was signed with the support of major Asia Pacific countries, and the status and role of developing countries in the process of globalization are getting more and more attention. This paper focuses on the differences in the impact of the above explanatory variables on the competition policy provisions signed by developing countries. After screening 1039 observation groups in the benchmark regression, 141 groups of “south-south” model and 694 groups of “south-north” model were obtained. The regression results are as follows (see [Table 4](#)).

Table 4. Analysis of the impact of different types of countries’ RTAs on the signing and effectiveness of competition policy provisions.

	Competition-ac		Competition-le	
	south-south	south-north	south-south	south-north
tsim	0.586*** (0.120)	0.444*** (0.129)	0.217* (0.120)	0.384*** (0.125)
fdiingap	0.006 (0.043)	-0.002 (0.002)	-0.197* (0.109)	-0.003* (0.002)
fdioutgap	0.324 (0.231)	0.003 (0.002)	-0.111 (0.263)	0.004** (0.002)
iqgap	-1.015*** (0.325)	-0.549*** (0.162)	-1.066*** (0.327)	-0.664*** (0.157)
cons	16.137*** (3.133)	2.886*** (0.251)	6.733** (3.025)	2.731*** (0.238)
<i>N</i>	141	694	141	694

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The results show that, whether in the “south-south” mode or the “south-north” mode, the economic and technological similarity and institutional quality gap between the two countries have a significant impact on the signing of competition policy provisions and the enforcement of laws in RTAs. It shows that the two countries with higher economic and technological similarity are more likely to reach the conclusion of competition policy terms, and it has a positive correlation with the degree of law enforcement of competition policy terms; the larger the gap between the two countries’ system quality is, the more unfavorable it is for the conclusion of competition policy terms and the improvement of the degree of law enforcement.

However, the inflow and outflow of FDI have different effects on the “south-south” model and the “south-north” model. Under the “south-south” model, the FDI outflow gap has a positive impact on the signing of competition policy, but has no significant impact on the legal enforcement of competition policy terms; while the FDI inflow gap has no significant impact on the signing of competition policy, but has a negative impact on the legal enforcement of competition policy terms, and the effect is significantly lower than the benchmark regression. It shows that in the “south-south” model, because the economic structure and industrial structure of developing countries are very similar, although there is a certain gap in the attraction of foreign investment, it can’t affect the decisive conditions for the signing of competition policy, so the results are not significant. In the “south-north” model, the results are basically consistent with the benchmark regression, showing a significant positive FDI outflow gap and a significant negative FDI inflow gap. It just shows that the larger the gap between the two countries in the volume of foreign investment, the more conducive to the signing of their competition policy and the degree of legal enforcement. The developed countries hope to enter the overseas market, have better bargaining power, and further open the markets of other countries, while the developing countries are more inclined to open their markets because of their weak OFDI, which just confirms the reason why many developing countries in Southeast Asia are willing to join the TPP and CPTPP: they can get better trade and investment. The larger the gap between the two countries in attracting FDI, the more unfavorable it is for the signing of competition policies. Developed countries are more attractive to foreign investment than developing countries in terms of economy, society and legal system. If they are in a fair competition market environment, they are bound to eliminate the less competitive market, so there is a negative relationship.

4.3. Stability Test

Theoretically speaking, when the two countries sign RTAs, they will not only be affected by the base period value of explanatory variables, but also by the changes of explanatory variables in the past few years or future years. When signing trade agreements, countries will consider the economic development

degree and institution quality of the host country in the past few years, and when FDI enters the host country's market, the trade effect will take time to play. This paper thinks that the factors affecting the signing and legal effect of competition policy provisions in RTAs need to consider the lag variables in the early and later stages. Therefore takes the average value of the first three years of the signing year of the RTA as the lag variable, variables are marked as W_{ijt-1} ; take the year of signing and the average value of the two years before and after signing, variables is marked as \bar{W}_{ijt} ; take the average value of three years after signing the RTA as the variable of lag period, variables is marked as W_{ijt+1} . The following hypothetical equation is obtained:

$$CP_{ijt} = \alpha_0 + \alpha_1 W_{ijt-1} + Z_{ij} \beta + \varepsilon_{ijt} \tag{2}$$

$$CP_{ijt} = \alpha_0 + \alpha_1 \bar{W}_{ijt} + Z_{ij} \beta + \varepsilon_{ijt} \tag{3}$$

$$CP_{ijt} = \alpha_0 + \alpha_1 W_{ijt+1} + Z_{ij} \beta + \varepsilon_{ijt} \tag{4}$$

Table 5 shows the regression results of explanatory variables under these three

Table 5. Robustness test on the signing and effectiveness of competition policy provisions in RTAs.

	Competition-ac			Competition-le		
	(1)	(2)	(3)	(4)	(5)	(6)
tsim	0.608*** (0.091)	0.624*** (0.093)	0.670*** (0.095)	0.681*** (0.087)	0.705*** (0.089)	0.776*** (0.093)
fdiingap	-0.729*** (0.219)	-0.696** (0.217)	-0.754*** (0.202)	-0.876*** (0.216)	-0.999*** (0.230)	-1.240*** (0.238)
fdioutgap	0.457* (0.197)	0.412* (0.196)	0.461* (0.181)	0.708*** (0.192)	0.816*** (0.202)	0.999*** (0.204)
iqi	0.720*** (0.083)	0.761*** (0.086)	0.730*** (0.083)	0.797*** (0.076)	0.816*** (0.079)	0.789*** (0.077)
iqj	1.201*** (0.112)	1.254*** (0.115)	1.207*** (0.112)	0.619*** (0.089)	0.638*** (0.090)	0.573*** (0.091)
Indist	0.894*** (0.175)	0.974*** (0.182)	1.014*** (0.185)	0.876*** (0.160)	0.916*** (0.164)	0.953*** (0.167)
distw	0.091** (0.032)	0.102** (0.032)	0.105** (0.033)	0.086** (0.029)	0.092** (0.030)	0.095** (0.031)
comlang	-0.227 (0.169)	-0.249 (0.170)	-0.289 (0.170)	-0.805*** (0.153)	-0.821*** (0.154)	-0.853*** (0.156)
contig	-0.419 (0.299)	-0.455 (0.306)	-0.510 (0.308)	-0.384* (0.289)	-0.405* (0.295)	-0.476* (0.298)
colony	0.522 (0.324)	0.579 (0.325)	0.553 (0.324)	0.872** (0.315)	0.936** (0.315)	0.951** (0.316)
cons	8.948*** (1.281)	9.585*** (1.334)	10.029*** (1.363)	8.604*** (1.168)	8.952*** (1.201)	9.422*** (1.231)
N	1039	1039	1039	1039	1039	1039

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

lag periods. Columns (1)-(3) shows the regression results that affect the signing of competition policy in regional trade agreements under the three lag periods, and columns (4)-(6) show the regression results affecting the effectiveness of competition policies in RTAs under the three lag periods. It can be seen that after data lag processing, compared with the benchmark regression results in **Table 3**, the economic and technological similarity between countries, the gap between the FDI inflow and outflow, and the institution quality all significantly affect the signing and effectiveness of competition policy provisions in RTAs. The results of lag test and benchmark regression were consistent, and the above hypothesis was verified.

Next, this paper respectively put 141 groups of “south-south” model data (see **Table 6**) and 694 groups of “south-north” model data (see **Table 7**) into Equations

Table 6. Robustness test on the impact of “south-south” RTAs on the signing and effectiveness of competition policy provisions.

	Competition-ac			Competition-le		
	(1)	(2)	(3)	(4)	(5)	(6)
tsim	0.618*** (0.124)	0.570*** (0.118)	0.531*** (0.112)	0.243** (0.119)	0.215* (0.120)	0.218* (0.117)
fdiingap	0.206 (0.531)	-0.104 (0.489)	-0.409 (0.507)	-3.160** (1.523)	-2.751* (1.459)	-2.168 (1.384)
fdioutgap	2.687** (1.288)	3.369* (1.935)	4.260* (2.301)	2.363* (1.345)	1.442 (2.000)	1.156 (2.508)
iqgap	-1.188*** (0.344)	-0.956*** (0.314)	-1.086*** (0.338)	-1.086*** (0.346)	-0.992*** (0.320)	-1.045*** (0.345)
cons	17.055*** (3.250)	15.728*** (3.069)	14.772*** (2.910)	7.396** (3.023)	6.625** (3.021)	6.672** (2.934)
N	141	141	141	141	141	141

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7. Robustness test on the impact of “south-north” RTAs on the signing and effectiveness of competition policy provisions.

	Competition-ac			Competition-le		
	(1)	(2)	(3)	(4)	(5)	(6)
tsim	0.519*** (0.129)	0.473*** (0.129)	0.613*** (0.131)	0.467*** (0.124)	0.421*** (0.125)	0.560*** (0.127)
fdiingap	-0.495** (0.227)	-0.511** (0.240)	-0.615*** (0.238)	-0.627*** (0.224)	-0.746*** (0.239)	-0.906*** (0.242)
fdioutgap	0.339* (0.200)	0.405* (0.208)	0.520** (0.203)	0.534*** (0.198)	0.690*** (0.209)	0.842*** (0.207)
iqgap	-0.426*** (0.156)	-0.521*** (0.156)	-0.262* (0.146)	-0.555*** (0.150)	-0.645*** (0.152)	-0.370*** (0.140)
cons	2.945*** (0.250)	2.957*** (0.254)	2.883*** (0.250)	2.827*** (0.238)	2.830*** (0.241)	2.735*** (0.238)
N	694	694	694	694	694	694

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

(2), (3) and (4) for lag test. Comparing with the benchmark regression results, it is found that in different model settings, the symbols of economic, investment and institutional quality variables of “south-south” or “south-north” model are relatively stable, and consistent with the benchmark regression results. In the analysis of the impact of the signing of RTAs on competition policy, through comparison, the regression effect of the lag period model is the most significant, which shows that in the process of signing the articles, the economic and institutional quality development trend of the two countries in the period before signing the RTAs has become an important factor, rather than only focusing on the base period data. However, when comparing the impact on the effectiveness of competition policy of RTAs, it is found that the regression coefficient sign obtained by lag model is consistent with the benchmark regression, but the regression effect is slightly more significant than that of benchmark regression, which indicates that the impact of policy effectiveness is not sensitive to the choice of lag number, and the above hypothesis is verified.

5. Conclusion and Suggestion

5.1. Conclusion

Based on the Deep-trade-agreement data of the World Bank, this paper makes statistics on the signing and effective degree of competition policy provisions in RTAs from 1996 to 2015, and empirically tests the influencing factors of the signing and effective degree of competition policy provisions in RTA. It is found that, in addition to the traditional geographical distance, common language and boundary, the economic and technological similarity between the two economies, the gap between the inflow and outflow of FDI, and the quality of the system all significantly affect the signing and effectiveness of the competition policy provisions in the RTAs. Further research found that, whether in the “south-north” mode or the “south-south” mode, economic factors and institutional quality factors significantly affect the signing and effectiveness of competition policy provisions. The effect of investment on the formation of competition policy is more significant in the “south-north” model, which shows that the differences between developed countries and developing countries in terms of potential market competition basis further promote the signing of high standard agreements. On the one hand, developed countries hope to obtain higher trade benefits through fairer and open markets. On the other hand, developing countries need to force domestic industrial upgrading and market-oriented reform by opening their markets and connecting with international high standard rules. Therefore, the deepening of competition policy provisions in RTAs can change the trade and political and economic environment of the two countries, reduce the tendency of trade protectionism, create a fairer market competition environment, and create the demand for the deepening development of RTAs.

5.2. Suggestion

First, promote the coordination and unification of competition policy under the

framework of WTO. Since the establishment of the WTO, international trade rules have been standardized through international treaties and regulations, thus promoting the development of global trade liberalization. WTO member states are obliged to formulate and coordinate more fair market management measures to ensure the effective operation of competitive market system. The coordination of competition policy at the WTO level involves the coordination of many countries and regions. At present, it is difficult to coordinate the competition policy at the multilateral level of the WTO because of the contradiction of economic sovereignty among WTO members and the different negotiation strategies of various countries. However, it is necessary to actively promote the application of competition policy in the WTO. The coordination and unification under WTO rules should belong to the obligation category of each contracting party. The formulation and coordination of competition policy will effectively guarantee more benefits brought by trade liberalization to WTO members. WTO can draw lessons from the advantages of several influential regional trade agreements in formulating competition policy terms, actively create a fair market competition environment, open the voice of developing countries, and promote the international coordinated development of competition policy.

Second, strengthen competition policy cooperation between developed and developing countries. The existence of leading powers such as the United States can strengthen the autonomous FTA effect and cross-FTA effect, and then promote the signing of FTA (Tie et al., 2017). Almost all the RTAs among developed countries cover competition policy, but the proportion adopted by developing countries is relatively low. The main reason can be explained as the developed countries have relatively perfect system level, high attraction to FDI, and tend to use a fairer market environment to promote trade cooperation. However, the market environment of developing countries lacks perfect competition order, and developed countries prefer to adopt unilateral policies to solve the problems in trade with developing countries, such as launching anti-dumping and countervailing investigations (Jing & Yuan, 2019). Therefore, developing countries need to strengthen the ability to sign competition policy provisions with developed countries, actively learn from the experience of developed countries, improve the domestic competition market, cooperate with developed countries in the construction of competition policy, and regularly exchange experience.

Third, strengthen the application of competition policy provisions in RTAs. From the existing phenomenon, many developed countries have long attached great importance to the competition policy provisions in RTAs, such as NAFTA, EU free trade agreement (Chen, 2020). Comparatively speaking, although China has required to establish the basic status of competition policy, strengthen regional trade cooperation and accelerate the pace of opening up in 2015, only 6 of the 17 regional trade agreements signed and in force in China have special provisions on competition policy, accounting for only 35%, which is at a low level

compared with some developed countries. RTAs have become an important part of China's foreign trade. With the development of global trade, in order to better safeguard the legitimate rights and interests of China's foreign trade and realize the practical needs of sustained growth of trade, it is an inevitable trend to strengthen China's voice in the formulation of international competition rules and to standardize and strengthen the competition policy provisions in China's RTAs.

Although this paper takes into account the time factor and the differences of the results brought by different types of economies, and makes the robustness test and heterogeneity test, it fails to make relevant analysis and research on the competition policy provisions in China's RTAs. The development trend of competition policy in China is also a hot spot of current research. The in-depth study of the level of terms in China's RTA will help to improve the inter regional trade, form a more competitive open market, and also help to provide policy reference for the strategic choice and negotiation strategy of China's future regional agreements. Therefore, this direction needs further study.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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