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Treaties to Avoid International Double Income Taxation and their Relation with Investments Involving Brazil

Abstract
To fight against fiscal evasion and facilitate the investment flow, the countries close agreements to go against double income taxation. This study aims to investigate the impact of the treaties to avoid double income taxation on the direct foreign investment relations of Brazil. The analysis included 162 countries and jurisdictions with which investments transactions were closed that originated or were received in Brazil, between 2005 and 2011. The panel data analysis technique was applied through the selection of six independent variables, in order to verify the behavior of the double taxation treaties in view of the investments. Through the estimated model, it was verified that these treaties had a positive and statistically significant impact – when compared to earlier studies – on the direct foreign investment volume. When dividing the sample between the investments received and made in Brazil, a greater increase was identified in the direct foreign investments received (130.1%) than in the investments made (76.9%), although this was the variable with the second largest positive impact in the model. In conclusion, exclusively in the Brazilian context, the international double income taxation is a relevant factor in the investment decision, as the presence of treaties to guarantee the investors in the receipt of revenues without double taxation substantially increases the investment flow. This study differs from earlier research by the sample that only contains treaties in force in Brazil.

Key words: International double taxation; Direct foreign investment; Income taxation.

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1. Introduction

According to Silva (2008), international double taxation happens when tax standards issued by more than one tax authority co-occur, submitting the same taxpayer to a same kind of tax in a same time period for the same taxable event. Countries do not want international double income taxation, as the globalization and the markets' opening to international investments have increased the capital flow.

Departing from the premise that, the higher the tax burden, the lesser the occurrence of foreign investments, countries can sign agreements to remain attractive to foreign capital.

In line with Bellan (2010), in recent decades, Brazil signed and ratified different treaties to avoid double taxation. The country also expanded its commercial transactions, with a consequent increase in the direct foreign investment volume received and made. To analyze this increase in investments, this study aims to investigate the impact of the treaties to avoid international double income taxation on the investment relations in Brazil, based on the following question: **What is the impact of the treaties to avoid international double income taxation on the investments received and made by Brazil?**

To reach the general objective proposed, the following specific objectives were outlined: i) to characterize the double income taxation and its effects on investments; ii) to analyze, in earlier studies, the variables the authors employed as determinants of investments in their statistical models; and, iii) to identify the direct foreign investments in inventories and their relation with the treaties.

In the method use, eight variables were selected that had been employed in earlier empirical studies as a parameter for comparison with the treaties in order to avoid the double taxation in relation to its impact on the investments, based on the application of the panel data analysis technique to the direct foreign investments made and received in Brazil between 2004 and 2011, in 162 countries and jurisdictions.

This study is structured in five sections, the first of which is this introduction; the second is a theoretical approach, analyzing the treaties according to the Brazilian legal framework, focusing on tax issues and on studies about international double taxation; the third describes the method employed, detailing the periods analyzed, the data sources, sample and statistical procedures; the fourth presents the analysis of the results and, finally, the fifth and last section presents the final considerations.

2. Theoretical Background

Treaty is any formal agreement that results from the manifestation of two or more subjects in International Public Law, with a view to producing legal effects for the contracting parties, in accordance with the international standards (Mazzuoli, 2011).

According to Mazzuoli (2011), if the agreement fits into the definition established in Art. 2º, inc. I, paragraph "a" of the Vienna Convention on the 1969 Treaty Law – of which Brazil is a signer –, the name attributed does not matter. This Convention defines *Treaty* as an international written agreement between States and ruled by International Law, whether in a single instrument or in two or more related instruments, no matter its specific denomination.

In Brazil, only the President of the Republic can sign treaties, conventions and international acts, subject to a referendum by the National Congress (subparagraph VIII in Art. 84 of the 1988 Federal Constitution-CF). The CF/88, in its subparagraph I to Art. 49, attributes exclusive competency to the Congress to solve issues about treaties, agreements or international acts, through the elaboration of a legislative decree.

The treaties, according to Mazzuoli (2011), can be bilateral, when they only have two contracting parties, or multilateral, when celebrated by more than two parties. As to its legal nature, according to Silva (2007), they are classified as international law treaties, when the contracting parties converge towards the creation of International Public Law standards, or as contractual treaties when the parties' will diverges and results from mutual concessions, so as to comply with their respective obligations, aiming for a common objective.

Contextualizing the definition of treaty in the tax context, according to Silva (2007), it is a legal agreement negotiated upon between two or more countries with the main goal of solving possible conflicts on the double income taxation that can occur in the international sphere.

In this respect, Art. 98 of the CTN (1966) determines that "the international treaties and conventions revoke or modify the internal tax legislation, and will be observed in any future legislation". Mazzuoli (2011, p. 386) emphasizes that this determination grants primacy to the international treaties in tax matters about the entire internal tax legislation. Hence, no law that goes against the determinations of a previously closed treaty in force in Brazil can be applied without the previous denunciation of the treaty, provided that it no longer attends to the international interests.

In practice, the Federal Supreme Court (STF) has considered that Art. 98 of the CTN is only applicable to the contracting treaties, and not to the international law treaties. According to Xavier (2007), this jurisprudence departs from the premise that the Constitution omits the hierarchical supremacy of the treaties and that Art. 98 of CTN is illegitimately invading an exclusive constitutional competency.

In addition, it should be mentioned that the Brazilian Internal Revenue Service (RFB) has the competency to interpret and apply the double taxation treaties, together with the Administrative Board of Tax Resources, considering that, when ratifying a tax treaty, it is the duty of the State to watch over its compliance, adapting its tax system for that end (Gonzaga, 2010).

2.1 The international double taxation

The double taxation involves the taxpayer's relation with the tax authorities of two or more States. According to Xavier (2007), it results from the concurrence of Tax Law standards, when two distinct fiscal standards can apply to the same fact, giving rise to more than one taxable event. It should be highlighted that, in this case, there is a juxtaposition or overlapping of standards, but not a conflict between them.

That is the case because the countries have sovereignty, a fundamental attribute that accompanies the State and which it cannot give up, as it is part of its essence. Silva (2007) explains that, through this sovereignty, the State has the power to establish a tax system and collect taxes and, as only the States have tax sovereignty, they have the exclusive competency to close tax treaties. Hence, the States need to limit part of their tax sovereignty and reach a common denominator for economic and tax reasons. Therefore, Faria (2006) explains that the phenomenon of double international taxation occurs when more than one tax sovereignty submits the same taxpayer, for the same taxable event, to a tax of the same kind in the same tax period.

The States adopt one of the following tax structures, according to Silva (2007): a) territoriality or the source criterion – only the revenues and earnings obtained within the national borders are taxed; and, b) universality or the criterion of residency or nationality – taxes the taxpayer's revenues and earnings independently of where they were obtained, observing only the residency or address.

Within these tax structures, the incidence hypotheses, according to Moreira (2003), are that: a) two or more States that adopt the territoriality principle consider that the revenues were earned within their respective territories; b) a State adopts the universality principle, with extraterritorial claims, and another adopts the territoriality principle; and, c) both States adopt the universality principle and consider that a certain taxpayer is national or lives in both States.

After the enactment of Law 9.249 on December 26th 1995, Brazil started to adopt the universality criterion instead of the territoriality criterion to tax the income of legal entities. The *caput* to Art. 25 of that law determines that "the profits, revenues and capital gains earned abroad will be considered in the determination of the real profit of the legal entities, corresponding to the year-end balance sheet". According to Faria (2006), the countries close treaties to avoid double taxation in the movements of capitals and persons, in technology transfers, in the exchange of goods, services and intellectual property, in cultural dissemination and in copyright.

A global tax proposal, in line with Avi-Yonah (2007), is the single taxation principle, in which the revenue from foreign transactions should be taxable only once, as double taxation can asphyxiate international investments. On the other hand, the absence of taxation in these transactions would offer an opportunity to escape from domestic taxation when investing abroad, negatively affecting the national tax collection.

To overcome that problem and avoid double taxation, the States use different methods, through unilateral, bilateral or multilateral measures, in which the treaties to avoid double taxation (TDTs) are considered a bilateral measure.

Different TDT models are developed, among which the country use the model of the Organization for Economic Cooperation and Development (OECD) the most frequently. This model divides the revenues into specific categories, considering the income taxation of legal entities as well as private persons.

According to Her Majesty's Revenue and Customs, there are more than 2,500 agreements to eliminate double taxation around the world. In Brazil, according to the data obtained from the RFB website (2013), 28 bilateral treaties are in force, in accordance with the OECD standards, to permit a greater flow of direct foreign investments (DFI).

2.2 Direct Foreign Investments and their relation with the treaties to avoid double taxation

Foreign investments can be made in the form of direct or portfolio investments. What distinguishes the modalities is that, in direct investments, the investor holds 10% or more of the ordinary stock or voting rights in a company while, in portfolio investments, this percentage is lower than 10%. According to the RFB (2014), direct investments are divided in two modalities: participation in capital (entries of goods, currency and external conversions in direct foreign investments, including amounts for the privatization program, related to the acquisition, subscription and total or partial increase of resident companies' foreign capital) and inter-company loans (credit granted by headquarters, located abroad, to their branches or subsidiaries established in the country).

According to Alvim and Moraes (2013), the policies implemented in the 1990's that were focused on commercial opening and deregulation, macroeconomic stabilization and privatization, changed the profile of the Brazilian economy, which had been isolated from international trade through protectionism that far, and permitted the country's greater attraction of DFI. In line with Paixão (2014), this change allowed the country to accompany the movement that happened in the first decade of the 21st century, when the developed countries progressively lost their share to the emerging countries, which started to concentrate more than half of the DFI inflows as from 2010. In this scenario, Brazil stood out not only regionally, but also globally.

In general, data published by the Institute of Applied Economic Research (IPEA, 2010) indicate that, as from the economic opening, the expansion rate of the country's DFI flows has surpassed the expansion of investments from other countries in Brazil, although the country remains one of the main hubs for this type of investment. The relation between DFI made and received increased from 8.7% in 1990-2000 to 51.7% in 2004-2008. The small initial volume explains the high rates though, considering that the country was but entering this new international trade modality.

As the income earned from foreign investments is subject to the income tax, the existence of international treaties against double taxation could reduce the investment costs and, consequently, stimulate the international investment flow. In that sense, Gonzaga (2010) explains that, in countries where the high tax burden represents a high cost for business accounting, the presence of these treaties can act as a determinant factor for investors.

Faria (2006) adds that, in tax matters, the international treaties aim to enhance the investment flow to Brazil and permit the adoption of fiscal incentives, creating a climate for foreign investors and permitting the reduction of the tax charged on the profit Brazilian companies make abroad and on the revenues branches of Brazilian companies transfer to the country.

There is another hypothesis though, in which the TDTs merely aim to fight against fiscal evasion, departing from their information exchange clause, instead of attempting to increase the investment flow. This type of treaty could even exert a negative impact for the investors, by requiring greater transparency from their side, as observed in the studies by Bloningen and Davies (2004) and Egger, Larch, Pfaffermayr and Winner (2006).

2.3 Previous empirical studies

Some authors started to try and verify the relation, or the lack of it, between TDT and DFI. Studies have so far been unable to reach a consensus on the theme, as the results have considerably diverged due to variations in the sample and the analysis methods of each.

Davies (2003) examined the impact of 20 renegotiations of TDTs between 1966 and 2000 in the United States' DFI and concluded that these renegotiations did not influence the investment flow, neither internal nor externally.

Bloningen and Davies (2004) also investigated the relations of DFI received and made in the United States, involving 88 partner countries between 1980 and 1999. The analysis distinguished between old treaties, concluded before the start of the sample period, and new treaties, concluded as from 1980, finding TDTs that did not exert positive effects in both situations.

Bloningen and Davies (2005) used OECD data on DFI inventories and flows, covering 23 developed countries between 1982 and 1992, and found a positive relation between the treaties and the large DFI flows and inventories. When dividing the sample between new and old treaties, their impact remained positive, while the new treaties showed a negative but not statistically significant influence.

Egger *et al.* (2006) estimated the effects of taxing treaties on bilateral DFI in a sampling universe of 67 pairs of OECD countries with treaties and 719 pairs without treaties, in the period 1985-2000. They concluded that the treaties negatively affected the DFI.

Neumayer (2007) developed a study based on 114 TDTs from the United States and aggregated data from 120 developing countries that received DFI, showing that the TDTs stimulated the DFIs by 22%. When dividing the sample between countries where the population income is considered median and countries with a low *per capita* income, it was perceived that the increase only happened in the first group, without any TDTs that produced a positive effect in the second.

Wu (2008) found no strong evidence that the TDTs increased the DFI activities in an analysis of the 16 TDTs and the country's investment history in Taiwan.

Barthel, Busse, Krever and Neumayer (2010) selected data from UNCTAD (United Nations Conference on Trade and Development) and OECD about the exit of DFI in 30 countries, ten of which in developing countries, and the entry of DFI in 105 countries, 84 of which developing. Both analyses considered data for the period from 1978 to 2004, discovering a positive relation between the existence of TDT and the increase in bilateral DFI.

This study differs from earlier studies as it uses a sample that only contains TDT in force in Brazil and aims to identify the relation between these two variables at the national level, while the earlier studies addressed the theme based on member countries of the OECD, according to Barthel, Busse, Krever *et al.* (2010), Neumayer (2007), Egger *et al.* (2006), Bloningen and Davies (2005), Bloningen and Davies (2004) and Davies (2003).

3. Method

To find a solution to the problem proposed, a descriptive research was undertaken the characteristics of issues related to a certain problem (Collis & Hussey, 2005). In addition, the study is exploratory, as its goal is to enhance the familiarity with the theme, as well as its utility without a comprehensive notion of the study topic (Roesch, 2006).

In that context, the goal was to investigate the impact of the treaties to avoid double income taxation on the direct foreign investments, using a quantitative approach of the secondary data through statistical methods in the analysis and interpretation of these data (Corbin & Strauss, 2008). In addition, a documentary and bibliographic research was undertaken. For the bibliographic analysis, previous publications on the theme were analyzed, mainly in books and scientific articles; for the documentary research, written documents were used from primary sources like laws, treaties and decrees, and from secondary sources like reports and statistical tables.

Between 2005 and 2011, it was identified, due to irregularities in the disclosure of data about DFI received and made in concomitant periods, that only the analysis of 2005 and 2011 would be possible. The database used for the direct foreign investments contains information about 145 countries that invested in Brazil in that period while, considering the investments Brazil made abroad, there is information about 133 countries. Both data were collected on the websites of the Brazilian Central Bank and the International Monetary Fund, in million dollars and constant prices.

The panel data analysis technique was applied due to the longitudinal nature of our database, firstly to the data from the inventory of DFI made (DFIs) and then to the inventory of DFI received (DFI_E). Due to the very distinguished transaction volume in the countries, the investment inventories were used in logarithms, so as to achieve greater uniformity in the data analysis. The software was R (2014), more specifically the "plm" package developed by Croissant and Millo (2008).

The independent variables selected are determinants of investments used in the earlier empirical studies by Barthel, Busse and Neumayer (2010), Neumayer (2007), Bloningen and Davies (2005; 2004) and Davies (2003), which represent factors that can influence the decision for the investment flow (Figure 1 and Equation 1). Hence, our model will be as follows:

$$Y_{it} = \alpha + \beta 1TDT_{it} + \beta 2AC_{it} + \beta 3PIBPC_{it} + \beta 4DIST_{it} + \beta 5SPIB_{it} + \beta 6QDIFPIB_{it} + \varepsilon_{it} \quad (1)$$

Where:

i	Country
t	Time
Y	Dependent variable (inventory of DFI), in dollars;
α	Interception of the straight line with the vertical axis;
β_1 a β_6	Parameters of the independent variables, effect of *X* on *Y*;
TDT	Presence or not of double taxation treaty among countries;
AC	Presence or absence of regional trade agreement among countries;
PIB_{PC}	Per capita gross domestic product of the country that received the investment in dollars;
DIST	Distance between country capitals in km;
SPIB	Logarithm of sum of countries' GDP in dollars;
QDIFPIB	Logarithm of squared difference between countries' GDP in dollars, and;
ε	Error or disturbance term, containing unobserved factors that affect *Y*.

According to Greene (2012), the main advantage of using panel data instead of cross-sectional data is that the former grant the researchers great flexibility to model the behavioral differences among the individuals, also called heterogeneity among the individuals. When this heterogeneity is observed, Greene (2012) affirms that the estimation of ordinary least squares with data pooling provides efficient estimates for the model parameters. When this heterogeneity is not observed and correlated with the model's independent variables, the fixed effects model should be used. And, finally, when there is no correlation between the independent variables and the non-observed heterogeneity, the random effects model should be used. To decide on which model adjusts better to our data, the F tests were used to test for the presence of fixed effects; Breusch and Pagan's test of the Lagrange multipliers to test for the presence of random effects; and Hausman's test to test for random and fixed effects (for further details on the panel data methods, see Greene (2012) and Wooldridge (2010).

Among the variables that had been employed in earlier empirical studies, the goal was to identify the variables that best adapted to the Brazilian reality, so that the analysis is not affected by data with little or no relevance.

Indep. Var.	Abb.	Objective of Variable	Data source
X_1	TDT	Dummy variable that verifies the impact of the treaties to avoid the double income taxation on the direct investment inventories. It is the most relevant independent variable for this study. It indicates whether there are TDT in force between the countries, considering the year it came into force in Brazil.	Brazilian Internal Revenue Service
X_2	AC	Dummy variable that signals the signing of a regional trade agreement among the countries. These agreements can be customs unions or free trade agreements.	World Trade Organization
X_3	PIB_{PC}	The per capita GDP is a factor that can influence the domestic consumers' purchasing power.	World Bank
X_4	DIST	Verifies how the distance between the countries influences the attraction of investments.	Distancefromto.net
X_5	SPIB	The sum of the countries' GDP analyzes whether larger and more similar economies tend to cope better with the market variations that influence the investments.	World Bank
X_6	QDIFPIB	Countries with greater economic differences would have difficulties to keep up mutual investment relations.	World Bank

Figure 1. Names of independent variables
Source: elaborated by the authors (2014)

The data were collected between September 2012 and January 2013. The sample was divided in two parts, between DFI made and received. The first part consisted of 133 countries and jurisdictions in which Brazil made direct investments; and the second considered of 145 countries and jurisdictions of investment received in Brazil.

4. Analysis of Results

First, the model was analyzed, considering the DFI Brazil made. Table 1 below shows the descriptive statistics of the variables used. It is observed that 20.8% of the countries that received Brazilian investments between 2005 and 2011 have agreements to avoid double taxation with Brazil.

Table 1
Descriptive statistics of the data – DFI made

Variable	Mean	Standard Deviation	Minimum	Maximum	N	NAs
IEDs	1,321	1,803	-7,699	4,675	250	149
TDT	0.208	0.406	0	1,000	399	0
AC	0.286	0.452	0	1,000	399	0
PIB_{PC}	3,863	0.643	2,231	5,084	332	67
DIST	3,884	0.227	3,165	4,275	399	0
SPIB	12,289	0.24	11,946	13,245	333	66
QDIFPIB	24,270	0.65	21,043	26,202	333	66

Source: elaborated by the authors (2014)

Table 2 indicates the results of the fixed and random effect models and using pooled data.

Table 2
Estimated results of the model – DFI made

Variable	Fixed effects	Random effects	Pool
TDT	-0.135	0.769**	0.746**
AC	–	0.344	0.287
PIBPC	-0.515	1.319***	1.422***
DIST	–	-2.581***	-2.967***
SPIB	0.534	0.715	0.905
QDIFPIB	0.494	0.136	0.114
Adjusted R squared	0.04	0.269	0.349
Observations	130	130	130

Legend: ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.
Source: elaborated by the authors (2014)

As perceived, in the fixed effects model, the estimated parameters of the variables AC and DIST could not be defined due to singularities. To define which model adjusts better to the data, the F test, Breusch and Pagan's test of Lagrange multipliers and Hausman's test were developed.

Table 3
Model specification tests – DFI made

Test	Hypothesis tested	Test coefficient	Decision
Teste F – EF	H_0 = No effect (pooling)	1.708**	Does not reject H_0, pooling
LM Breusch and Pagan – EA	H_0 = No effect (pooling)	164.158***	Rejects H_0, random effect
Hausman	H_0 = Random effect	3.03	Does not reject H_0, random effect

Legend: ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.
Source: elaborated by the authors (2014)

The results presented in Table 3 show that the model that adapts best to the data in the random effects model. The first test indicates that there exists no empirical evidence for the use of the fixed effects, in favor of the pooling model. When tested with the random effects model, there is evidence in favor of

its use and, finally, when the fixed and random effect models are tested, again, there is evidence in favor of the use of the random effect model. Thus, the use of the latter was chosen to analyze the results. It should be highlighted here that the serial self-correlation test was applied and that the result of 1.954 showed that there exists no serial self-correlation in the data.

Through the second column of Table 2, a positive and significant relation can be observed between the existence of a double taxation treaty and an increase in the investment volume with regard to the DFI Brazil made. The *per capita* GDP of the country that received the investment, considered as a parameter, indicates the income level as the most influential factor in the analysis of DFI made for the countries Brazil invests in. The distance to these countries' capital, however, negatively affects the investment made. This is explained by the fact that the Brazilian companies are but starting the internationalization process and initially seek geographically closer markets. The other variables did not demonstrate statistical significance at the usual significance levels.

The descriptive statistics of the variables used in the DFI model received are presented in Table 4, showing that 18.8% of the countries that invested in Brazil between 2005 and 2011 have agreements with the receiving countries to avoid double taxation.

Table 4
Descriptive statistics of the data – DFI received

Variable	Mean	Standard Deviation	Minimum	Maximum	N	NAs
IEDE	1,407	1,851	-4,398	5,242	368	67
TDT	0.189	0.392	0	1,000	433	2
AC	0.263	0.441	0	1,000	433	2
PIBPC	3,939	0.188	3,676	4,100	435	0
DIST	3,905	0.234	3,170	4,280	435	0
SPIB	12,288	0.237	11,950	13,240	356	79
QDIFPIB	24,279	0.642	20,990	26,195	356	79

Source: elaborated by the authors (2014)

Table 5
Estimated results of the model – DFI received

Variable	Fixed effects	Random effects	Pool
TDT	-0.203	1.301***	1.559***
AC	–	-0.697**	-0.632***
PIBPC	-0.276	-1.896**	-2.275***
DIST	–	-1.870***	-1.817***
SPIB	3.084	4.934***	4.605***
QDIFPIB	-0.046	-0.398***	-0.515***
Adjusted R squared	0.215	0.387	0.437
Observations	193	193	193

Legend: ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.
Source: elaborated by the authors (2014)

Table 5 above shows the estimation results of the fixed effects, random effects and pooling models for the model of DFI received. Like in the previous case, for the model of DFI received, the model chosen to represents this relation is the random effects model, according to the results of the tests displayed in Table 6.

Table 6

Specification tests of DFI model – received

Test	Hypothesis tested	Test coefficient	Decision
Teste F – EF	H_0 = No effect (pooling)	6.244***	Does not reject H_0, pooling
LM Breusch and Pagan – EA	H_0 = No effect (pooling)	197.297***	Rejects H_0, random effect
Hausman	H_0 = Random effect	5.606	Does not reject H_0, random effect

Legend: ***, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.

Source: elaborated by the authors (2014)

The random effects model did not show serial self-correlation (the test coefficient corresponded to 2.813 with p 0,093). In this model, the variable TDT is significant and positive, indicating that the agreements to avoid double taxation increase the DFI Brazil receives. The variable SPIB, statistically significant and positive for this analysis, indicates the size of the market that receives the investment, together with the issuing market, relevant for the volume of DFI Brazil received. This variable indicates that the investment relation between large markets tends to involve a bigger transaction volume and, therefore, that countries with a high GDP are prone to a large mutual investment relation.

The model results indicate that the trade agreements reduce the DFI received. That may be the case due to the fact that Brazil has signed these agreements mainly with emerging countries – with a more limited investment capacity. The Brazilian population's income level was not positive for the investors, justifying the fact that the larger per capita GDP represents higher spending on workforce, without influencing the Brazilian foreign investment, as the country cannot do without investments in important and consolidated markets simply due to the fact that the population's income level in those countries is higher.

The fact that the DIST variable was negative is justified by the fact that the inflow of DFI in Brazil mainly comes from companies from developed countries, which have already reached an advanced stage of internationalization. Thus, the geographical distance is not a big obstacle for these investors. The variable QDIFPIB negatively influences the DFI Brazil received, revealing that, between markets of more discrepant sizes, there is a trend towards smaller investment volumes. This is explained by the fact that it is difficult to have uniform investment values when one country's consumption market is less prone to absorbing large supplies when compared to the other.

In general, the estimated results suggest the significance of the treaties role in the current economic context, in which the great competitiveness turns taxation into a preponderant factor for the investment decision. The result found in this study is similar to the results found by Barthel, Busse and Neumayer (2010), Neumayer (2007) and Bloningen and Davies (2005), but go against the evidences obtained in the studies by Egger *et al*. (2006) and Bloningen and Davies (2004), which concluded that the treaties to avoid double taxation did not positively affect the DFI.

It is highlighted that the sample in this study differs from earlier studies, as it is restricted to Brazil (323 observations). The determination coefficient, although lower to 50%, follows the trend of research on the theme, due to the difficulty to select independent variables that are able to robustly explain the dependent variable "investment inventory". This is due to the complexity of that variable and to the fact that, due to the sample size, the availability of published data that cover its full extent is limited, restricting the number of possible variables.

5. Final Considerations

The objective in this study was to investigate the impact of the treaties to avoid international double income taxation on the Brazilian direct foreign investment relations. Therefore, a panel data analysis was developed using six independent variables – representing factors that can influence the decision to invest, including the presence of a treaty to avoid double taxation.

The results obtained through the model confirm the positive and statistically significant influence of the double taxation treaties on the investments involving Brazil, corresponding to an increase in the direct foreign investment volume. When dividing the sample between the investments Brazil received and made, it was verified that the increase was bigger in the direct foreign investments made (130.1%) than in those received (76.9%).

Most of the other variables presented the expected results, with a determination coefficient that follows the trend from earlier studies by Barthel, Busse and Neumayer (2010) and Neumayer (2007). The number of variables conditioned the number of observations, which was limited to a single analysis country (Brazil).

In conclusion, in the Brazilian context, international double income taxation is a relevant issue in investment decisions, as the presence of a treaty that aims to guarantee that the investors' gains earned will not be taxed twice can substantially increase the investment flows.

From a macro perspective, it is evidenced that the increase in the direct foreign investments strengthens evidence obtained from the studies by Barthel, Busse and Neumayer (2010), Neumayer (2007) and Bloningen and Davies (2005), while differing from the results found in the studies by Egger *et al*. (2006) and Bloningen and Davies (2004).

Despite the limitations found in the study, such as lost data for all variables, except for the dummy variables TDT and AC and the variable DIST and the limited periodicity in the dissemination of the investment values, this study reached its main objective of investigating the impact of double taxation treaties on the direct foreign investments in the Brazilian context.

It should be highlighted that, despite the technique employed in this study, there are various ways to address the theme for the sake of future research, including: adopting of more robust statistical methods, use of other variables determining investments, besides the possibility of a better disclosure of investment data and other variables by the countries' governments, with a view to the availability of a larger number of data for analysis.

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