

Border Effect and the Ascension of Emerging Economies to International Trade: The China Effect

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Abstract

The study objective is the checking of the impact represented by the Chinese insertion in the relations of the international exchange, mainly, in what refers to the new economical order and the economies belonging to BRIC'S. For this, are observed the main characteristics of the emergent economies, the relevant contributions of the border effect and the variables of the China effect and the analyse the determinants of the gravity equation. The results present the presence of the China effect, the positive sign of the distance coefficient comes to confirm the new direction of the trade in global levels.

Keywords: Border Effect, China Effect, Gravity Model, International Trade

1. Introduction

The international trade visualized like the form of use more complex than the productive factors. Cassano (2002) describes the trajectory of the elements in the economical theory inside this process of expansion of the trade between the nations. The economical history nominates the commercialism like landmark of the relations of exchange, this one subsequently would be substituted by the economical liberalism, where the exterior trade was already becoming essential to the growth of the nations. The time and the space situate the theoretical visions around the international economical system. Interpretations of conjuncture, cycles and movements happen from countless observations carried out the worldwide level.

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The historical inflections, from the called "crisis of the American hegemony" of the 1970 years, as defines Fiori (2007), they suggest a new focus, whose main premises is discuss the insertion of the emergent economies in this system, among them Brazil, China, India, Russia, South Africa and debate the current North American landing.

The historical system of centralization of the wealth and monopolization that was developed along the history, characteristic which, in agreement with Fiori (2007), was present in the last 500 years, differed as to its expected path. Instead of going to the global power, acted in the strengthening of the national capitals, giving rise to what the author called "a national state-economy". This in turn, would disrupt the process of accumulation of capital and would direct the system for a state of disordered, however continuous expansion. The increase of the global flows of extern investment, after the recession of 1980, produced positive expectations in the international community. According to Acioly (2005) this flow would play a part of worldwide and regional economical integration, when the existent relations were given between investment, technology, trade and financial flows. The macroeconomics itself establishes this relation, just as the impacts country to country in the variation of the extern income and of the factors that constitute the product. The scientific and informational revolution together with the technology and the globalization they brought with themselves changes in the geopolitical structure of the countries. The expansion of the international trade of goods and services to taxes superior to production of this, as they detach Silva et al. (2007), besides the expressive financial flow in international level is contributing to elevation of the standard of living of the populations of several nations. The transmission of the effects caused by the reduction of the domestic barriers listed the bigger integration between the countries, reducing the aspect of the national sovereignty.

In the current state of affairs the analysis of the bilateral relations of trade is possible, like presented by Silva et al. (2007), through the called "equation of gravity", which correlates the trade with the geographical distances, economical and levels of income of the countries. The equation of the model of gravity studies the bilateral trade between the countries and checks that this one is straightly proportional to the Gross Domestic Product (GDP) and inversely proportionally the distance between them. In this form, since they expose, countries of the great transport have a tendency to have more relations of trade between themselves, being that the distance appears like resistance factor.

With this, the objective of the present study is to examine if the China effect changes the presuppositions established by the border effect in the international trade. The boarded subject is justified while the Chinese interference in the current swinging of the Brazilian exterior trade and of too much emergent economies it is significant. The work this one subdivided in four sessions, the first one characterizes the emergent economies pertaining to the BRIC'S in the international context; on second establish the emergence of the Chinese economy to the current levels of commercialization, the third one enumerates the main contributions of several scholars and investigators her around the border effect and the variables of the China effect and, on fourth it analyses the evolution of the gravity equation in the determinants of the international trade. From this, are pointed out the characteristics methodological of the study and the main obtained results and discussion around this. For end, some relevant considerations.

2. Theoretical Referential

2.1 BRIC'S: Emerging Powers in the new Dynamics of International Trade

The crescent protagonisms of the emergent powers has been discussed through multiple approaches. Changes in the global trading order represent an important factor to be addressed before this new conceptualization and future expectations of national economies. In this sense this session characterizes the dynamic of the international trade from a set of countries that stood out in this scenery, they are: Brazil, Russia, India, China and South Africa, called BRIC'S.

The term BRIC was widespread by the economist Jim O'Neill (2001) linked to the bank Goldman Sachs. In his study he established comparisons between these countries and the economies of the called group of the seven (G7) composed by USA, Canada, United Kingdom, France, Italy, Germany and Japan. In the perspective of O'Neill (2001), which included Brazil, India, Russia and China only, these nations would start to be the main economies of the world in 2050. His evaluation was delimiting that China would start to be the main economy of the world, followed the United States, India, Japan and Brazil.

The economical performance of India, on basis of Vieira and Veríssimo (2009), reflects the reforms implemented in the country from the decade of 1990.

The economy started to present a significant macroeconomical self-confidence, with elevated growth rates of the GDP, debt, mainly, for the commercial liberalization, from the opening to the foreign straight investment, of the modernization of the financial system and of the reduction of the monopolies of the public sector. The sustentabilidade of this process will depend: "*[...] da capacidade do setor de serviços e industrial de produzir maiores efeitos de encadeamento entre si e com a agricultura [...]*."³ (VIEIRA; VERÍSSIMO, 2009, p. 523). Russia began his economical expansion in 1999, from that time he is presenting declining taxes of inflation jointly with expressive growth rates of the product. Vieira and Veríssimo (2009) give emphasis to the fact that the Russian GDP was supported in the high prices of the oil in the international market, in the increase in value of the coin, in the increase of the production and in a strengthened home market. The quick recuperation powders-crises of 1998, as they affirm, relied in the elevation of the prices and in the volume of resources exported by the country, and show up like considerable factor to the quick growth concomitantly to reactions endogenous related at prices, exchange and other factors.

Among the countries that compose the BRIC'S, it is Brazil that had the least growth rates of the GDP between 2000 and 2005, as demonstrate Vieira and Veríssimo (2009). After the commercial and financial opening of the decade of 1990, since they express, begins a process of deregulation of the markets, privatizations, reduction of the acting of the State and possible inflationary stabilization due to the introduction of the Real Plan in 1994. From 1999 became part of inflation targeting strategy, the fiscal targets and exchange rate flexibility.

Vieira and Veríssimo (2009) describe the South Africa like the biggest power of the African continent that obtained distinction in the international economical scenery due to the rising growth rates of the product from 2000. One of the factors pointed to this concerns the exchange rate of the country where that: "*[...] o comportamento do índice real de preços das commodities do setor mineral da África do Sul tem impacto sobre a renda real e a taxa de câmbio associado à apreciação cambial real no período mais recente (2003 a 2006)*."⁴ (VIEIRA; VERÍSSIMO, 2009, p. 528).

³ [...] of the capacity of the sector of services and industrial of producing bigger effects of chain between themselves and with the agriculture [...].

⁴ [...] the behavior of the real rate of prices of the commodities of the mineral sector of the South Africa has impact on the real income and the rate of exchange associated to the real exchange appreciation in the most recent period (2003 to 2006).

In this relatively current period, the country developed strategies of competitiveness for primary products, just as, intensive manufactured products in capital. Among the relevant respected factors in the study of the growth of these five countries, Vieira and Verissimo (2009) point to the importance of the investment tax rises to middle and long term in order that to be obtained growth rates higher and supported along the time; the necessity of the flows of extern capitals as fountain of additional resources that would come to lift up the tax of thrift and investment in the economy, besides a bigger participation in the international trade through the participation of the exports in the GDP that, in this context, are made relevant.

For end, it is necessary to analyse, as Thorstensen and Oliveira (2012), that these countries not only acted like elements of sustenance of the worldwide economy, in a scenery after the crisis of 2008, but also became poles of expansion of the international trade, through the growth of exports and imports. In this sense, it is looked now to elucidate the evolution of the Chinese economy at international level before his potentialities and to characterize his effects as a whole in the modifications of the structures of commercial interdependence at global level.

2.2 The Border Effect

Among the different delimitation on the effect border he can be glimpsed how to not interference of the borders in the commercial transactions, defining, so, the complete integration between the members of this operation. In agreement with Daumal and Zignango (2005), can be measured like the difference between the observed trade and that he seriates without the existence of the borders: "We measure the effect of borders the difference between the observed trade and the trade that „would be“ in the absence of borders." (p. 3). The theory demonstrates that the effect is the same as the product of the elasticity of substitution between goods and as the tariff of barrier of the respective border. The study pioneer of this area was begun by the work of McCallum (1995), which was consisting of the fact that, besides the impact of distance, the border they seem to reduce significantly the trade. In his initial work, concentrated in the trade between the Canadian provinces where internally the trade exceeds the international for a factor of, approximately, 20, this in the year of 1988, for the given bilateral distance and for the size of the regions. According to the author the borders show up in a constant state of flow and this possibly is associated to the economical position which they belong.

Other precursors of this subject were Anderson and Van Wincoop (2001) affirming that the gravity model itself (tool econometric linked to the effect) was, several times, used in order that they checked if the commercial flows between customs unions, in border of the exchange rate mechanisms, ethnic and linguistic aspects. They report, also, that one of the primary topics of the macroeconomical analysts and of rulers in border of the exterior trade it is the border impacts that he can cause.

The concept of the "border effect" is one of the considerations most accepted in the international economy, defined, according to Combes et al. (2003), like the interference of the distance in the formation of the volumes of bilateral trade between the nations. In this sense, Castilhos (2005) conceptualizes that:

O "efeito-fronteira", que vem a ser uma sofisticação do modelo gravitacional, é uma medida alternativa do grau de acesso a mercados. Este método consiste em comparar os fluxos de comércio intranacional com aquele com terceiros países. Toma-se, então, o comércio intranacional como base e introduzem-se dummies para os pares de países. O coeficiente desta variável mede o "efeito-fronteira", ou seja, mede a diferença da intensidade de comércio entre os diversos pares de regiões ou países relativamente ao comércio do país consigo mesmo. Esta diferença pode se dar devido à preferência dos consumidores domésticos por produtos nacionais – o que seria o "viés doméstico" – ou a outros fatores, inclusive aqueles associados à política comercial. (p. 3, grifos do autor).⁵

The application of this study in Brazil wraps several authors. Hidalgo and Vergolino (1998) making use the trade matrix of 1991 valued the characteristic of the Brazilian macro-regions. Among several factors observed in the study characterized that the segmentation of the borders one can be based in: commercial barriers (tariff and not tariff), natural (costs and transport time), cultural and institutional, the exhibition to the exchange risk, the preferences for domestic products and to existences of natural channels of trade between the oligopolies.

⁵ The "border-effect", which becomes a sophistication of the model gravity, is an alternative measure of the degree of access when to they were bought. This method consists in comparing the flows of intranational trade with that one with third countries. It takes, then, the intranational trade as base and they are introduced dummies for the couples of countries. The coefficient of this variable measures the "border effect", in other words, there measure the difference of the intensity of trade between several couples of regions or countries relatively to the trade of the country I manage even. This difference can be given due to the preference of the domestic consumers for national products – by what would be the "domestic slant" – or to other factors, including those associates to the commercial politician.

Daumal and Zignango (2005) studied the border relation of the Brazilian states, being based on the studies of Anderson and Van Wincoop (2001). From this study they point out what the effect borders internal in Brazil it can be explained by series of factors as: the Sales tax (VAT), geography, economical structures, culture differences through states and for local slants in acquisition of state-owned government. In this way, they list the reasons for which the dynamic one of the borders in the Brazilian interstate trade must be thoroughly explored.

As for the results obtained regarding most of the countries, with the exception of China, Brazil it joins less scale to the global markets owing to presenting a market and a broken up exporting list. So, Daumal and Zignango (2005), delimit that: "The magnitude of border effects among Brazilian states is close to the value of border effects among European countries. The magnitude of Brazilian border effects is close to those of China, suggesting a correlation between trade integration and level of development." (p. 8). The heterogeneity of the internal trade is an example, in case of Brazil of the structural, economical and geographical differences. China became a real example of which an emergent country can modify the structures of the international scenery, confirming the worldwide belief in the linkage of economical power to the hierarchical position occupied by States in the international system. Several conceptions that wrap the border effect are questionable in border of the implications that characterize the ascent of the Chinese economy, these events, they brought with them, a new phenomenon, the called China effect. In the sequence they will be glimpsed it the theoretical contributions around this effect.

2.3 Characterization of the China Effect

The Chinese economy is making part of the global process of commercial interaction. Its position relative to globalizations divides the opinion of scholars and brings up the question about the direction of emerging and world trade as a whole. The economical-political weight of China in the current capitalism, which comes being strengthened through the commercial opening that started to be in force in the economical scenery of the country, does so that the papers are rethought of too many nations, just as which the influence that she can establish on them.

It is possible to understand, on basis of Tepassê and Carvalho (2010), that in the last decades the exporting scenery of China is ruled by products of higher and higher technology, being differentiated, however of the traditional market of commodities. According to them it: "PIB da China responde por 7% do PIB mundial (Banco Mundial, 2009), o crescimento mantém média anual em torno de 10% e 98,4% das exportações chinesas são compostas de produtos manufaturados, com 30,5% dos manufaturados em produtos de alta tecnologia."⁶ (TEPASSÊ; CARVALHO, 2010, p. 2). In this context, there appear the elements nominated by the Economical Commission for the Latin America and the Caribbean (Cepal) like new economy „sino - cêntrica,, which produce different effects in different dimensions. The passage of the Chinese economy of export for consumer of commodities, besides the differentiation of his list of imports favored countless nations. The elevation of the Chinese economy to position of second global economy modified, as they present Puga and Nascimento (2010), the configuration of the international division of the work. Likewise, countless countries, they observe the reduction of his comparative advantages in the products that represent competition with the Chinese. The technological evolution of China and, the production of more sophisticated goods brought, also, the reduction of the importance of production in several countries.

The declining tendency of the prices of the manufactured products, as Modolo (2012) emphasizes, on the other hand with the ascent of the prices of the products in natura it reflects the first aspect of the called China effect. The elevated production levels of commodities that it characterizes countless countries today like, for example, Brazil are evidence of this definition. Is consistent with these reflections Prates (2007) when it emphasizes that this growth is led by intensive sectors in commodities metal and industrial, what for his time, finishes pressing the demand for these goods, and this is aggravated border of the population growth. This increase of the Chinese demand, which brought an increase of the exports of primary products at worldwide level, modified the productive state of countless countries altering commercial and strategic positions. The second aspect of this effect must be noticed regarding the opportunities of imports of Chinese products, how it emphasizes Modolo (2012). Those are in special the intensive manufactured products in labor and the electronic products, of computer science and of telecommunications.

⁶ GDP of China answers for 7 % of the worldwide GDP (World Bank, 2009), the growth maintains annual average around 10 % and 98,4 % of the Chinese exports they are composed of manufactured products, with 30,5 % of the manufactured products in products of high technology.

So, the Chinese growth presents opportunities for the development of commercial partnerships through cheaper imports and high quality, improving in productivity and efficiency the importing country. In the same way, reduces the potential resourcefulness of the internal market in this country, besides altering its ability to compete on world markets. There are still not known the future consequences of a bigger Chinese participation in the internal economy of several countries. Up to the moment it is perceptible what this growth has a tendency to maintain and to modifying, to the step of his evolution, the international economical state of affairs. Regarding this aspect the main delimitation of the gravity model is presented in the next session, just as the most relevant criticism to this approach.

2.4 The Gravity Model: Theoretical and Empirical Aspects

The determinants of border effects confirm marketing relationships between nation. Classics of the international economy since Krugman (1980) already related to their studies the marketing of imperfectly competitive economies, product differentiation border, factors of production and technology. The gravity model, for his time, includes the distance between the countries like variable that is opposed to the commercial flow. The main theories about this are highlighted below.

The development of the theory of the Universal Gravitation proposed by Isaac Newton (1642 - 1727) revolutionized not only the knowledges of the physics, but it has been used in several other areas of the knowledge. One of the most interesting applications is still his adaptation to the social sciences and his incorporation, from the decade of 1960, to the economical visions to the international trade. Grüdtner and Gonçalves (2012) point out what the Law proposed by Newton reports that between two bodies this force of attraction is a straightly proportional relation between the product of the mass of the bodies and inversely proportionally to the square of the distance between they. This relation can be expressed by the equation:

$$\frac{FG = G(m_1 \cdot m_2)}{d^2} \quad (01)$$

Where does it act by force gravitational, and are the masses of the bodies, s the constant gravitational and it is to the distance.

Daumar and Zignago (2005) lists that in his most simple form, the gravity equation applied to the trade situates the relation of bilateral trade between two countries. This relation would be proportional to his economical sizes, and inversely proportional to the distance between them. So, it became a form well succeeded in the explanation of commercial flows and in the statistical analyses of the trade. Differential of Newton's model, in agreement with Grüdtner and Gonçalves (2012), is in the establishment of the force of attraction that is practised regarding the mass and distance between objects. His adaptation to the trade was brought into effect under the hypothesis of which the trade flow is straightly influenced by the income of the countries. In this way, the gravity model has the function of outlining the area of interaction of a country, in the face of the market idea, considering the attraction between these that is determined positively by the intensity of the exchanges and negatively by the distance. $FG \propto \frac{1}{m^2 m^2 G d}$

Grüdtner and Gonçalves (2012) affirm that:

A justificativa teórica mais difundida para a utilização do modelo gravitacional remonta ao modelo de comércio desenvolvido por Krugman (1980), que considera que os consumidores buscam variedade ao consumir. Neste caso haveria diferenciação do produto entre as firmas monopolisticamente competitivas, não somente entre os países, e assim um país com maior produção teria maior capacidade de satisfazer os anseios dos consumidores ao ofertar uma ampla gama de produtos. Soma-se a isso o fato de as economias com grande produção tenderem a gastar muito com importações haja vista sua alta renda, desta forma o comércio entre duas economias seria maior, tanto maior fossem seus PIB's (p.69-70).⁷

⁷ The theoretical justification most spread for the use of the gravity model remounts to the model of trade developed by Krugman (1980), which thinks that the consumers look for variety while consuming. In this case there would be differentiation of the product between the firms monopolistically competitive, not only between the countries, and so a country with bigger production would have bigger capacity of satisfying the longings of the consumers while offering a spacious scale of products. Add up to that the fact of the economies with great production of having a tendency to spend very much with imports have seen his high income, in this way the trade between two economies would be bigger, so much bigger they were his GDP.

The gravity model became a tool very much used in studies on the subject of the trade well-adjusted the different objectives, how, for example, the attempt of explaining the border effect. Several variables were already used to improve the model, according to Grüdtner and Gonçalves (2012), some explanatory“s, like population (or GDP per capita) and area of the country, besides dummies what represent geographical characteristics or of cultural proximity, like official language, common culture, blocks participation you do business, between others. Piane and Kume (2000) reflect that recently, the gravity equations were even based on models in which the countries were specialized in the production of determined differentiated goods. This is a characteristic own to the production of manufactures and not from the made a list one to the homogeneous primary goods. In this way, that type of equation was applied, as they affirm, “empirically” so much to countries of the Organization for the Cooperation and Economical Development (OECD) as to developing countries.

Azevedo et al. (2006) describe that the approach of the gravity equation constituted an expressive set of hard-working works, mainly in the formation of the European Union, being that the relation of the trade between the nations depends straightly on the mass (GDP) and inversely of the distance between them. In this analysis it is possible to identify the influence of commercial

preferences with determinative others of the trade, like the geographical proximity, levels of income, population, language, territorial area, between others.

In agreement with Azevedo et al. (2006) “[...] modelo gravitacional é representado por relações expressas em uma equação que leva em consideração algumas variáveis tidas como importantes para a sustentação do modelo.”⁸ (p. 246).

The basic form of the model is expressed by the relation:

$$M_{ij} = \beta Y_i^{\beta_1} N_i^{\beta_2} Y_j^{\beta_3} N_j^{\beta_4} D_i^{\beta_5} T_j^{\beta_6} \exp[\beta_7 C_{ij} + \beta_8 I_i + \beta_9 I_j + \beta_{10} L_{ij}] \quad (02)$$

⁸ [...] gravity model is represented by relations definite in an equation that takes into account some variables when had been how important for the sustenance of the model.

Where α is the fixed coefficient; ijM represents the bilateral trade between the countries i and j , expressed by the value of imports or exports or the sum of both; Y_m is the GDP of the country m , being $m \in (i, j)$; N_m is the population of the country m , being $m \in (i, j)$; D_i is the gravitational distance country i of j ; T_m is the land area of the country m ; C_{ij} is a dummy that has a unit value up i and j have territorial border and zero otherwise; I_m is a dummy that has a unit value up m is an island, and zero otherwise; L_{ij} is a dummy for cultural approaches, which normally uses as a proxy the language spoken by the countries.

So variable GDP plays a part of proxy of the income, in other words, as affirm the authors, in such a way that one is supposed that the bigger the income of importer, the bigger will be the demanded quantity of products for part of this country, converging for the idea of which the bigger the product of a nation, bigger will be the diversity of goods being offered. As for the variable population it works like a measure of the potential of the markets open to question, and, if added up to the variable territorial area, she makes possible to appreciate the degree of auto-sufficiency of a country. Regarding the distance, since they continue, the influence happens in the process of processing of goods between nations.

The model of gravity as simple as possible since it proposes Anderson (1979) is resulting from a formulation Cobb-Douglas of a system of expenses. How much the different uses of the model, Morais (2005) are reflected by it that the same thing has been used to value the impact of the commercial agreements in the states and Brazilian regions. In this, since the author continues, are used data of intra-state, intra-regional commercial flows and of the unities of the federation with the rest of the world. The main criticism to the model, because of being described by the mathematical and intuitive totality on which the same thing is based, without taking into account theoretical bases. However, a great deal of this criticism were losing the force in so far as several authors contributed to give this theoretical grounding to a gravity model. An example it is the studies carried out by Anderson and Van Wincoop (2001 and 2003) that proposed a theoretical microeconomic grounding for the model. Leitão (2010) applied the determinants of the gravity equation to the trade of the USA, the obtained empirical results came from meeting to the defense of the model, reaffirming the analogy to Newton's Law.

3. Material and Methods

The objective of this study is to show the underlying factors up to the multilateral flows of trade that develop Brazil, India, Russia, China and South Africa. Through these conceptions it is looked to detach the variables that wrap the China effect and to check if this modifies the border effect. In this way, this study is characterized how being of descriptive hallmark, wrapping a quantitative approach making use of panel data.

It is pointed out also, that the research happened through the deductive method. For the data collection from in the period 1992 to 2013 made use, fundamentally, of bibliographical and documentary inquiry through secondary fountains to the international trade between the countries pertaining to the BRIC'S and, the distances between these countries. Subsequently, the tool was applied econometric of the gravity model for getting the main results, what it is described in specific session.

3.1 Empirical Model

The theoretical justification for the use of the gravity model part of the presuppositions established by the model of trade of Krugman (1980), in this sense, the use of the model, has since objective checks the potentialities in the relations of commercial integration between the countries pertaining to the BRIC'S, showing up if the effect Chinese is able of change the results waited in an analysis of the border effect. The estimate is characterized for an analysis of multiple regression, which represents the relation between a dependent variable for more than an explicative variable. Was used the sample regression function (SRF) for getting estimated parameters. As for the functional form of the model the logarithm was used (log-log), to make the esteem linear. In this model, since Gujarati and Porter (2011) reflect the angular coefficient it acts and elasticity of the variable explained regarding the explicative one. In this way, the variables are used in the logarithmic form and they will be analysed in percentage values. The SRF based on the model estimated of Azevedo et al. (2006) is described for:

$$M_{ij} = \ln \beta + \beta_1 \ln Y_i + \beta_2 \ln N_i + \beta_3 \ln D_{ij} + \beta_4 \ln T_j + \beta_5 \ln X_i \exp[\beta_6 C_{ij} + \beta_7 L_{ij} + \beta_8 K_{ij}] + u_i \quad (03)$$

Where β is the fixed coefficient or constant; M_{ij} represents the bilateral trade between the BRIC'S components, expressed by the ratio of the value of imports over exports, found that countries import more from China than it exports to it; Y_m is GDP of country m , being $m \in (i, j)$, Nm is GDP per capita in the country m , being $m \in (i, j)$, being is GDP per capita in the country $\in (i, j)$, Di is the gravitational distance country i of j ; Tm is the habitable land area of the country m ; Xm is the percentage of representation of agriculture in GDP (%) of the country m acting as a proxy of china effect; C_{ij} is a dummy that has a unit value up i and j have territorial border and zero otherwise; L_{ij} is a dummy for intra or inter marketing industry through the GL index, which has unit value if the trade between i and j is predominantly intra-industry and value 0 (zero) for inter and K_{ij} and represents the dummy targeting trade.

The regression will be carried out using the method of data of panel. The period of collection of the data includes the years from 1992 to 2013 (21 observations). In this way, a group of variables was selected you specify for esteem and getting the results:

- a) Annual GDP in dollars (US\$): In the model it is considered as a measure of the size of the market and one takes office, so that this one has a positive impact on the trade flow between the countries along the time in international extent, the data of each one of the delimited countries were extracted of the bases of World Bank and United States Department of Agriculture (USDA);
- b) GDP per capita annual (US\$): through him it is possible to infer the level of income of each country and to visualize the interference of this in the commercial relations, together with the GDP there are the proxies for the economical mass of the countries, in allusion the equations of the gravity in physics. Data of World Bank and USDA;

- c) Distance Gravitational between the capitals, measured in kilometers (Km), works like a proxy to represent the transport costs in the process of trade, obtained in *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII);
- d) Habitable territorial area, disregarding seas and lakes, in Km², made available for World Bank;
- e) Percentage of Representation of the Agriculture in the GDP (%), obtained in the World Bank, the growing Chinese demand for commodities food is important of the China effect, from there the importance of the variable;
- f) Exports and Imports in US\$ of too many Bric's with China available series in *United Nations Commodity Trade Statistics Database* (UNComtrade) and those of the South Africa were complemented with data of *Department Trade and Industry Republic of South Africa* (DTI), due to non-existence of precise data in what tells to itself to the periods from 1992 to 1995 of the exports and imports of Russia for China and from 1992 to 1999 of China for the South Africa there were used the reverse series of the respective commercial partner;
- g) Dummy of the border has unit value if the countries have territorial border and zero opposite, obtained case of Brazilian Institute of Geography and Statistics (IBGE);
- h) Dummy of the rate GL of Grubel and Lloyd (1975), in this proposes the authors like measure of the trade intraindustry to difference between the total trade and the trade interindustry $(X+M) - |X-M|$. If $GL=1$, the whole trade is intraindustry; $GL=0$, the whole trade is interindustry and $0 < GL < 1$, $GL > 0,5$ the intraindustry trade predominates, already $GL \leq 0,5$, the interindustry trade predominates. 1 (one) assumes then value when the trade is a predominant intraindustry list and value 0 (zero) for interindustry list. On basis of Silva et al. (2010) the trade intraindustry that it shapes a flow of goods with intensity of similar factors, while interindustry and characterized by the specialization through the comparative advantages;
- i) Dummy of direction of trade, represented the value 1 when the trade flow is directed of the country i for j and zero opposite case.

The use of the series of dollars makes unnecessary to deflate them, since the unity catches the variations of the prices along the established period. The methods used for the estimates were the Method of the Ordinary Least Squares (OLS). The OLS provides the best estimate of the parameters, that is, distance the sum of the estimated residuals in relation to the sum of the estimated Y real be the lowest possible.

4. Analysis of the Results

With the process of globalization, not only economical, but also, in the sense multidimensional, the attentions were turned for the emergent economies. So being, how described by The Global Enabling Trade Report (WEF, 2014), the developing countries be undertake a prominent paper in the economy, which makes them the motors of the international trade, and it increases his signification in this. With the intention of checking the relevance of the relations of trade of the countries pertaining to the BRIC'S and the Chinese influence in this context the main results of the study are described. The maximum, minimum, the mean and the standard deviation of the variables are described in the table 1. The China presents the biggest GDP followed by Brazil, Russia, India and South Africa, in this order, being that the mean was established in US\$ 1.790,00 billions. Already the GDP per capita on mean between the BRIC'S represents US\$ 2.757,02 being the biggest pertaining one to Russia (US\$7.042,74 referring to 2013) and the less to India (US\$ 423,53 referring to 1992). The exports of five countries presented an mean of US\$ 9.300,00 millions and a standard deviation of US\$12.600,00, already in the imports the standard deviation and mean were bigger, US\$14.900,00 millions and US\$ 11.200,00 millions, respectively.

Table 1: Mean, Maximum, Minimum and Standard Deviation of the Set of Variables

Descriptive Statistics of Variables				
	Mean	Maximum	Mnimum	Standard Deviation
GDP <i>per capita</i> (US\$)	2.757,02	7.042,74	423,53	1.882,43
GDP (US\$ billion)	1.790,00	9.240,00	111,00	2.180,00
Imports (US\$ millions)	11.200,00	55.500,00	57.279,77	14.900,00
Exports (US\$ millions)	9.300,00	50.500,00	64.751,74	12.600,00
Distance (Km)	9550,67	16.948,04	3.785,01	5.176,59
Territorial Area (Km ²)	8.293.181	16.389.950	1.213.090	4.317.718
Agriculture in % of GDP	11,89	28,74	2,39	6,67
Border	0,50	1	0	0,50
GL	0,83	1	0	0,38

Source: Preparation of the author

Eight gravity regressions were estimated with the intention of to check it as for direction of the trade of too many BRIC'S for China and of this for with them it interferes in the relation of established trade. For his time, this relation was determined from an indicator calculated by the reason between the imports and exports. When an increase of 1% is considered the trade of Brazil for China (model 1) in the GDP of the component countries, *ceteris paribus*, it generates the increase of 0,3412% at the trade reason, in other words will reflect an increase of imports, or the reduction of the exports. As for the GDP per capita, in the same model, a variation of 1% it generates an opposite effect of 1,0358 % in the reason, that means that it will do so that the exports increase. The percentage participation of the agriculture in the GDP revealed significant regarding modifications in the trade of Brazil with China, where you the modification in 1 % it will affect this relation in -1,0205%.

The Distance, *ceteris paribus*, is emphasizing the existence of the China effect in the international trade between the nations when varied in 1 % it will cause a variation in the same sense of 2,1249 % in the trade reason, that reflects that potentially the imports are increased, modifying the presupposition established by the border effect of which when bigger the biggest distance to reduction tendency in the trade, pointing out that the distancing between Brazil and China is the biggest of considered. Is possible to Identify that, both imports and exports can be increased due to this effect, however the positive sign shows what the imports has more weight in this commercial relation. As for the dummy established in this model (1) happens what the existence of common border impacts significantly in the trade relation. Then, when the two variable constant ones are considering, the fact of the country of having border with China causes a positive variation of 2,3250 % in the indicator. In the model 5 the situation is reverse, in other words, the trade direction is from China for Brazil, happened what this dummy however represents exactly the opposite relation visualized in the previous one. And the model for his time, has an adjustment superior to a previous one, the variations of the independent variables explain nearly 53 % of the variations in the explicative variable. The participation of the agriculture in the GDP also revealed highly significant in this model. The modification of 1 % in this percentage reflects a modification in the opposite sense of 1,2792 % in the trade reason, this reinforces the information of which the Chinese exports it has bigger weight in border of the agricultural contingent that finishes by influencing negatively countries traditionally exporting like Brazil.

Again the of the distance coefficient of the distance prove positive, increasing the reason of trade between two countries, in the sense China Brazil, *ceteris paribus*, is reflecting the existence of the China effect.

In the models 2 and 6, they form when the direction were used India-China and China-India, respectively. In both models the dummies of direction were not significant at the respected levels. Emphasizes again the presence of the China effect captured by the variable distance, which coefficient revealed positive. The coefficient of the area in spite of significant in two models, was revealed with more influence when the direction is of India for China. So, when varied in 1 %, *ceteris paribus*, she teases in a reduction of 0,8219 % in the indicator, this can be explained by the fact that the bigger the cultivable territory of a country, the bigger will be her exports and the less the imports, being what considers the hypothesis of which he will be abundant in resources and will produce internally what before needed to matter. The participation of the agriculture in the GDP revealed significant at the levels of 1 %, 5 % and 10 % in the two models (2 and 6), being that when bigger the participation of the agriculture in the GDP, having constant too much, less will be the level of imports, or bigger will be the level of exports of this country in accordance with the determined indicator. The border dummy showed in the elevation of the indicator in the models. Highly significant the existence of common border between the countries lifts up the reason in 2,1860 % in the model 2 and 2,2376 % in the model 6, emphasizing one of the determinants of the border effect.

As for dummy of the rate GL in these models it showed up insignificantly. In the estimates finding them a model 3 and 7 to dummy of direction established it concerns to Russia-China and China-Russia, in this order. In the model 3, the GDP when altered in 1 % it provokes a modification of 0,5019 % in the reason between imports and exports, the same thing takes place in the model 7 where this alteration represents 0,4670 %. As for dummy of direction, happened what of Russia for China the imports lift up more than the exports, how much of China for Russia the exports has bigger representation, this can be observed regarding the sign of the coefficients that they lift up or reduce the reason of trade. When the trade of establishes of Russia for China (model 3), *ceteris paribus*, is the indicator lifted up in 0,7166 %, in the opposite sense (model 7), a reduction of 0,3972 % takes place. What does justify the best adjustment of the model that considers this direction (3). Again since in the previous models the coefficients of the area presented themselves negative and highly significant.

In the model 3 the variation of 1 % in the territorial area of the country cause a modification of -1,0592 % in the trade reason, already in the model 7 this variation is of -0,9209 %. The representation of the agriculture in the GDP was significant at the respected levels, being which influence more when the direction happens of China for Russia, where the modification of 1 % in this percentage alters reason of trade in the sense opposed in 1,5607 %, they are considered, in this case, which takes place to elevation of the exports in this sense.

It was analysed then, to relations of direction of trade between South Africa and China, through the models 4 and 8. The dummies of direction in two models showed up insignificant at the levels of 1 %, 5 % and 10 %. The coefficient of the distance is confirming the presence of China effect in all the trade relations between the BRIC'S, analysed in this study. As for percentage participation of the agriculture in the GDP, this one showed up how significant in two models where the alteration of 1 % in this participation percentage will modify in the sense opposed in 1,1716 % and 1,4023 % in the models 4 and 8, respectively. The distance to the being varied in 1 %, when are considering the too variables constant ones, provokes a modification of 2,0266 % in the reason of trade, in the model 4 and, 1,8433 % in the model 8. That characterizes an elevation in the trade levels, however in bigger proportions in the imports. The border dummy also alters positively the indicator in two models, *ceteris paribus*. Is perceptible the interconnection of the commercial relations between the set of countries pertaining to the BRIC'S and the China. The table 2 represents a synthesis of the estimates of eight models. The model who presented the biggest coefficient of determination was the third which direction is from Russia for China, most of the variables were shaped how highly significant, the presence or not of the constant one it does not alter the model of significant form. The variable distance was positive in all the models strengthening the hypothesis of which the China effect has sufficient force for change the border effect, in other words, the presence of the Chinese economy in the context of the international trade is sufficiently strong in the form to attract too many countries inhibiting variables opposed like distance, this owes also at the level competitiveness to itself structured in the country.

Table 2 – Synthesis of the Respected Coefficients of the Models 1 to 8

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant	-5.8846**	-2.7599 ^{NS}	-3.3692 ^{NS}	-6.3329 ^{NS}	0.6392 ^{NS}	-3.5741 ^{NS}	-7.2233***	-2.5331 ^{NS}
Log (GDP)	0.3412*	0.4028*	0.5019*	0.4018*	0.3400*	0.4079*	0.4670*	0.4046*
Log (GDP per capita)	-1.0358*	-1.3477*	-1.4159*	-1.2426*	-1.1555*	-1.4015*	-1.5204*	-1.3571*
Log (Fiel)	-0.8591*	-0.8219*	-1.0592*	-0.7626*	-0.8036*	-0.7932*	-0.9209*	-0.8016*
Log (Agric in % of GDP)	-1.0205*	-1.4034*	-1.2601*	-1.1716*	-1.2792*	-1.5016*	-1.5607*	-1.4023*
Log (Distance)	2.1249*	1.8932*	2.0794*	2.0266*	1.4900*	1.9834*	2.5148*	1.8433*
Border	2.3250*	2.1860*	2.1612*	2.3311*	1.8948*	2.2376*	2.9628*	2.0692*
GL	0.1195 ^{NS}	0.0741 ^{NS}	0.1090 ^{NS}	0.0809 ^{NS}	0.0726 ^{NS}	0.0645 ^{NS}	0.0489 ^{NS}	0.0573 ^{NS}
Brasil_China	-0.3997**	-	-	-	-	-	-	-
India_China	-	-0.0791 ^{NS}	-	-	-	-	-	-
Russia_China	-	-	0.7166*	-	-	-	-	-
South Africa_China	-	-	-	0.3787 ^{NS}	-	-	-	-
China_Brasil	-	-	-	-	0.5282*	-	-	-
China_India	-	-	-	-	-	0.1378 ^{NS}	-	-
China_Russia	-	-	-	-	-	-	-0.3972**	-
China_South Africa	-	-	-	-	-	-	-	-0.1217 ^{NS}

* Highly significant

** Significant at the level of 5 %

*** Significant at the level of 10 % NS Not Significant

Source: Preparation of the author

The GDP coefficients per capita, Area and percentage of the Agriculture in the GDP stood out as negatives contradicting what was established how waited previously. An explanation for this incident can be the biggest influence of these variables on the level of exports of the countries, coming in this form to reduce the indicator. The predominance of the trade intra and inter-industry, measured it shears dummy GL also it showed up to have no influence on the trade reason, this for what is considered the effect of economies of scale and of the differentiation of product has a superior force when the marketing refers with China. Other variable ones followed the expectations, in this way the final considerations are established.

5. Final Considerations

The international trade comes from meeting to the proposed one for several theories that contemplate his determination, when to the establishment of advantages and profits. In the models it was possible to notice in the common border between the countries practices the biggest influence in the trade reason, the reduction in the transport costs is a main reason for this. In second, the distance went to the variable that more it influenced when is reflecting the China effect, being in opposition to the border effect that establishes it like factor of reduction of the trade. The revolution informational in which the current trade is inserted at global level still will have much to be studied. The knowledge is the best weapon in order that several sides of this process are explored. Nations are becoming increasingly similar in their composition in strategic relations, the differential will meet in conjunction capacity of internal and external information to create alternatives that strengthen their economies and act how barriers to the external disturbances. In this sense, is undeniable the Chinese presence in the relations increasingly significant international trade, what demand a differentiation factor to the other economies.

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