TRADE FLOWS ANALYSIS IN TEXTILE SECTOR BETWEEN CHINA, EU-28 AND SELECTED GROUP OF COUNTRIES (2008-2014). A GRAVITY MODEL

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ABSTRACT

In an increasingly globalized world, political and economic relations between countries are of great importance. This article shows the existing business relationship between China and the European Union from 2008 to 2014. Thus focusing on the textile sector, we want to analyze the impact that have exports and Chinese trade flows on the countries of the European Union during the period of economic crisis that has affected the world economy. It is analyzed by a gravitational econometric analysis, which variables are the most important and which ones have more value in the field of study we refer. Furthermore, subsequently, and in order to make a more accurate estimate, another econometric model will be estimated including, apart from the 28 countries of the European Union, the United States, Canada, Brazil, South Africa, Australia, Argentina, Mexico, Morocco and New Zealand, thereby increasing the number of observations.

Classification JEL: F10, F13, F14

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TRADE FLOWS ANALYSIS IN TEXTILE SECTOR BETWEEN CHINA, EU-28 AND SELECTED GROUP OF COUNTRIES (2008-2014). A GRAVITY MODEL

I. INTRODUCTION

In the globalized world in which we live, economic relations between countries or economic areas are essential to ensure economic growth of each one. The history of international trade details the evolution of the concept trade in each of the stages of our history. Recently, since the end of World War II, trade between the countries has increased significantly thanks to several historical facts that without them would be impossible to understand the reality in which we live. One of these events took place in 1946, when the Bretton Woods' Agreement came into force, in which preventing trade barriers' rules were taken into account as certain sectors of the economy considered that the lack of free trade countries had been one of the main causes of World War II. Later, in 1947, twenty-three countries carried out the General Agreement on Tariffs and Trade (GATT), which in 1995 became the World Trade Organization (WTO), whose aim was to facilitate free trade. These events took place seventy years ago and had an impact on the global economy to grow so much during later periods. However, we must bear in mind that the economic situation resulting from the war left Europe with very low levels of GDP, so it is understandable that high growth.

By the change of the century, in which situation is international trade? As regards the evolution of total trade in the last ten years, this is characterized and conditioned by the economic and financial crisis that has affected the global economy. However, and despite the difficulties, there has been a significant increase during that interval, summarized in the following stages:

The first stage, from 2004 to 2008, when the economic crisis began, was characterized by progressive increase. The second stage, from 2008 to 2009, has as main feature the trade slowdown that affected the global economy. However, from those years, the situation has improved since, since 2009, world trade has grown back significantly.

Currently, there are several countries and economic zones that dominate the world trade, among which we highlight the European Union (formed by twenty-eight States), China and the United States. However, trade is made up of many sectors. Focusing

only in the textile sector and considering only the first two mentioned countries, will they remain dominant in this sector? Do they have commercial relationships between them? What factors can determine the behavior of Chinese exports or trade flows (exports plus imports) into the European Union?

This work will answer the questions posed. We will analyze international trade between the two economic areas, focusing on the textile sector, for the past seven years (2008-2014). To do this in later sections relations between the two sides (in total assets issues and issues of specific sectors) the historical development of trade relations will be explain briefly, which will include the various treaties and agreements negotiated jointly. Later, there will be a review of existing literature gravity model and, finally, we will arise and estimate various econometric equations, with the main objective to find and show which determinants influence positively or negatively on the performance of this sector. It is important to note the importance of the textile sector has in global trade, which is especially important in trade between the two economic zones. Therefore, in the following lines, although we will also explain exchanges in a general way on exports and imports of both parts, we will enter to analyze the proposed sectors.

II. EVOLUTION TO TRADE BETWEEN TWO ECONOMIC AREAS

To understand the industry that we analyze and singularities of each of the economic zones that are part of this study, it is necessary to include a section in which it is explained, not in great detail but with specific aspects, the history of each country, the history of trade relations between them and the various agreements related to the textile sector.

A) TRADE HISTORY BETWEEN TWO ECONOMIC AREAS

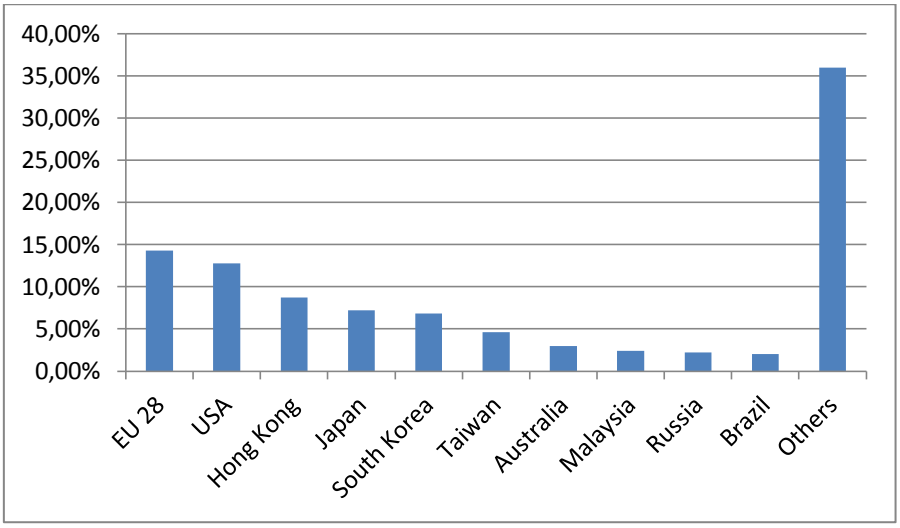
Following the victory of the Allies, the new postwar commitment to promote international economic cooperation and multilateral institutions necessary to sustain it also had its reflection in a series of exceptional measures that aimed to integrate European economies. These actions were born as a result of the critical situation in Europe, where the economic situation of different countries was devastating. In the fifties, the United States supported several European plans assembling the production in some sectors of heavy industry, establishing international bodies with powers to monitor this common production and creating large areas of free trade, which later had much to do in the training of the European Economic Community (EEC) and, later, to the current European Union (EU). Although since 1945 the trend gained momentum to

strengthen cooperation and economic integration, a large number of obstacles on the way were found, due mainly to big political differences of the two superpowers of that time: Soviet Union and the United States. However, the quickly breakup of the European colonial empires after World War II, where the vast majority of the colonies were located on the African continent, and the fall of the Soviet Union after 1991 outcome in creating a lot of newly independent states with their own economic, trade and monetary regime, which further complicated the tasks of international cooperation.

Even the extraordinary success of the post-war international economic order, as a basis of growth and development worldwide, it has generated its own political challenges. The rise of new economic powers such as India, China, among other countries, has led to a relative decline of the United States which, although currently remains the only world superpower, is losing a small part of their power, forcing the world to rethink the concept that the United States is the only hegemonic power, to guide you to find a scenario that get a broader global economic leadership.

In the present case, and then, we will discuss the countries and economic areas that are part of this study: China and the European Union. First, we will start talking about the trade in China. Since 1949, when the People's Republic of China was founded, until 1978, its economy was planned, similar to the Soviet Union's. However, since then, its economy was liberalized; this country has experienced a spectacular growth, whose behavior depends largely on the investments made and exports (Maiza Larrarte, 2009). Nowadays, this country is one of the largest trading partners worldwide, the European Union and its main partner in terms of total trade (see Figure 1). In addition, in this same figure, you can also observe that the United States occupies a prominent position within this classification, covering the 12.8% of total trade between China with the abroad. It is significant that after the European Union and the United States, several countries such as Japan, South Korea or Taiwan, whose main common characteristic is its proximity to the Chinese giant. Here are the top ten trading partners of China (European Commission, 2015):

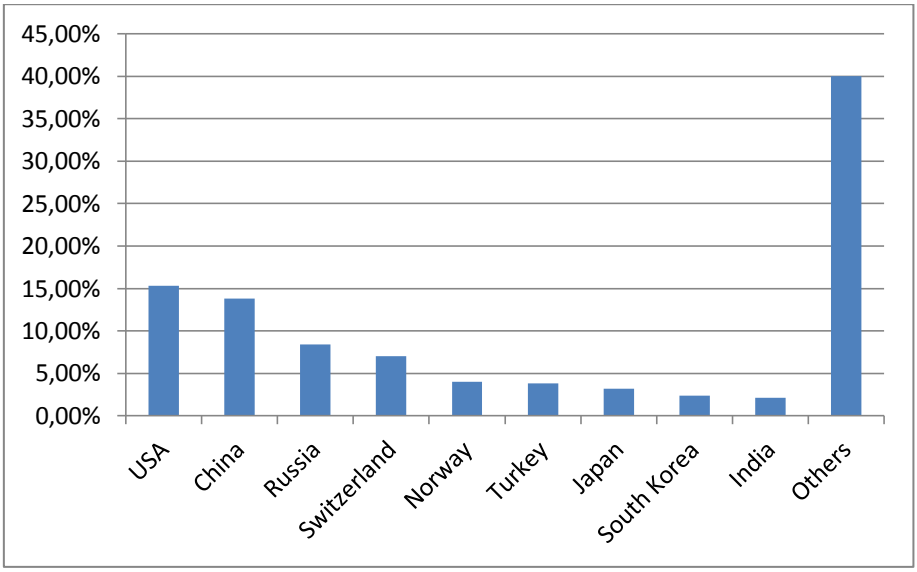
Figure 1: China, Total goods: Top Trading Partners 2014- Total Trade



Source: Own elaboration on data from European Commission- Directorate-General for Trade

We could do a similar analysis to the European Union. This community of law, created to encourage and accommodate the integration of Europe people was established by the entry into force of the Treaty on European Union (TEU) in 1993. However, the relationship between the different people began long before. The creation of the Economic Community in 1957 with the signing of the Treaty of Rome, and with the participation of Belgium, France, Italy, West Germany, the Netherlands and Luxembourg, had the aim of the economic integration, including a common market and customs union. Currently, and since 2009, the European economy has suffered its major economic crisis, which has caused that the economic growth in states such as Greece, Ireland, Portugal or Spain has been negative in this period (more noticeable in the case of Greece). Consequently, the EU is trying to increase economic and political integration among its member states, approved for these common tax measures, greater economic coordination in the euro zone, strengthening the bailout funds for economic difficulties countries, etc (European Commission, 2015). As regards the commercial aspect, which is what interests us, the group of countries that make up the Union is the largest trading partner in the world. However, unlike with China, its main partners differ in some cases due primarily to the distance between territories. In Figure 2 we can see that the main partners, apart from China and the United States are close in terms of distance countries (Switzerland, Turkey, and Russia, among others).

Figure 2: European Union, Total goods: Top Trading Partners 2014- Total Trade



Source: Own elaboration on data from European Commission- Directorate-General for Trade

With the data we just bring, we can say that China is a very important country for the European Union, considering that currently is the second largest exporter and importer of the total trade for the European market (World Bank, 2015). However, trade relations between the two sides have experienced different situations throughout history. The relationship between them began in 1978 when China, in a process of progressive liberalization, was opened to the world market, something that we discussed before. The subsequent for such economic growth liberalization was the result of a deep process of structural reforms, which were initiated under the Chinese Communist Party, led by Deng Xiao Peng. These reforms were aimed for giving a greater prominence to financial markets. To that end, and in a progressive manner, the government intervention in the economy was reduced (both production levels and price levels) as well as encouraged the private initiative. However, during those years, the trade policies of the European Union just regarded China because the percentage of foreign trade that came from that country was very low (Maiza Larrarte, 2007). Based on the Treaties, with the signing of the 1978 Trade Agreement and European Economic Community- China Agreement for cooperation and trade in 1985, both partners undertook:

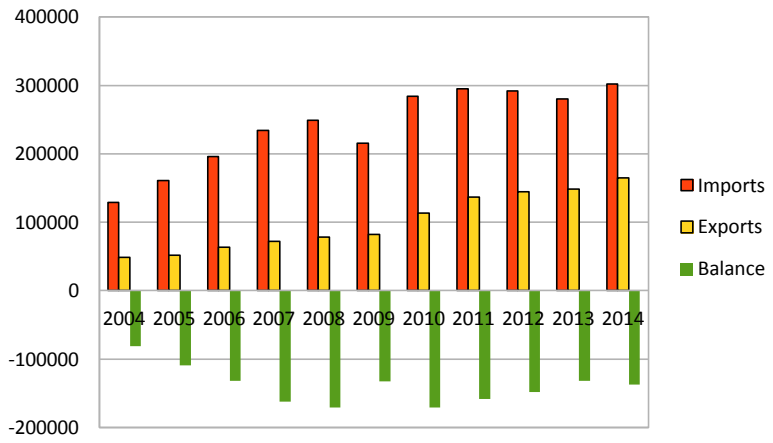
I) Taking measures to create the conditions for bilateral trade
II) Granting the other party most-favored-nation treatment
III) Establishing a Joint Committee to ensure compliance with the rules of the agreement

Since the nineties, when the entry of Chinese products increases dramatically, the European Union decided to change its business strategy and changed its strategic plan in order to turn China into one of its main partners. As part of the World Trade Organization (WTO) in 2001, the EU urged the entrance to the Asian giant in it. These events led to a situation in which the European Union achieved several objectives that had marked, within that strategic plan, which is mentioned below:

I) It was established a milestone in Sino-European alliance
II) It was guaranteed better access to the Chinese market by European companies.
III) It was achieved that the rules and instruments of trade defense actions of the World Trade Organization (WTO) shall form the basis of trade relations between the EU and China.

Denis at al (2006) notes that "the EU enjoys a great complementarity with China in its trade structure, because the EU is specializing in technologies medium-high and capital goods, while China enjoys a comparative advantage in low-level technologies, intensive labor products and goods of information technology and communication". However, these author had a bit of fear that with the passage of time, China experienced a jump in the value chain that would allow it to compete on equal terms with the EU on certain capital goods (as may be the case of the automotive sector). In the figure below, we can observe trade flows of the EU and the result of the trade balance with China, in the period 2004-2014.

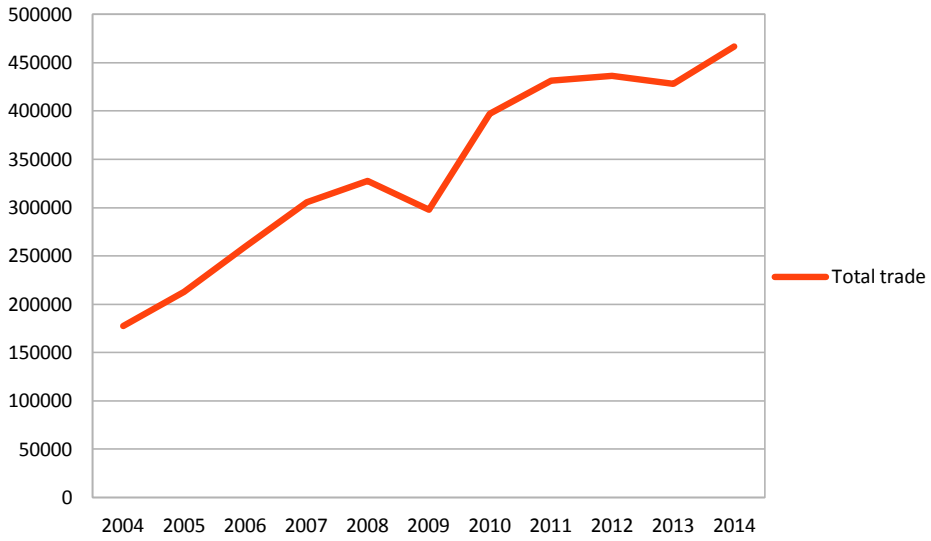
Figure 3: Total goods: EU Trade Flows and Balance with China, annual data 2004-2014 (Value Mio €).



Source: Own elaboration on data from European Commission- Directorate-General for Trade

We can see that imports far exceed European exports to the Chinese giant, resulting in a trade deficit in each year. However, and as it is shown in Figure 4, the evolution of total trade between the two areas has grown steadily in the last ten years (except for a slight drop between 2008 and 2009).

Figure 4: Evolution of total trade between the two economic areas, 2004-2014 (Value Mio €)



Source: Own elaboration on data from European Commission- Directorate-General for Trade

B) THE INSTITUTIONAL FRAMEWORK: THE MULTI-FIBRE AGREEMENT

Then, once explained the synthesis of trade relations and total trade flows between the EU and China, we will enter into the subject of study that we will discuss in this article. As regards the textile sector, mentioned before in the motivation of the study, it would not be possible to understand the evolution of trade between the two economic zones, without previously mentioning the Multi-Fibre Arrangement.

According to the above mentioned by different authors and institutions (Maiza Larrarte, 2009; WTO, 2016), the Multi-Fibre Agreement (from now MFA), which was established in 1974, was aimed for the regulation of the global trade in textile products to the end of the Uruguay Round, the quotas on textiles and clothing were negotiated bilaterally and governed by the rules collected in this agreement. This provided the selective application of quantitative restrictions when a sudden increase in imports of a given

product may cause, a serious injury to the local industry of the importing country. The MFA constituted a major departure from the basic GATT rules and in particular the principle of non-discrimination. However, on the 1st of January 1995 it was replaced by the Agreement on Textiles and Clothing (ATC), which established a transition process for the final elimination of quotas. This agreement lasted 10 years and was a transitional instrument which included the following items listed below:

1. The goods, which mainly include yarns, fabrics, textile products and clothing;

2. A program of progressive integration of textiles and clothing in the 1994 GATT rules.

3. A process of liberalization to progressively increase the existing quotas (until eliminated), increasing at each stage, the coefficients of annual growth.

4. A mechanism transitional safeguard, during the transition, in cases of serious injury or threat of serious injury to the domestic production.

5. The establishment of a monitoring body Textiles (OST) to oversee the implementation of the Agreement and to ensure the strict compliance.

6. Other provisions, such as rules on circumvention of quotas, the administration of restrictions, the treatment of restrictions outside the MFA and other commitments under the Agreements and WTO procedures affecting that sector.

With the completion of the ATC on the 31st of December 2004, the agreement signed thirteen years ago with the quotas on textiles was completed and until the end of 2008 there was a safeguard mechanism, which allowed member governments of WTO measures to reduce imports, if exports of Chinese textile products cause a market disruption. By the end of this agreement, on the 1st of January 2005, it is when the major conflict arose regarding the textile sector between China and the European Union. From that date, products in the textile sector were incorporated into the provisions of the 1994 GATT rules of the WTO, which imports could only be provisional emergency quotas. This liberalization, had a dramatic impact on the European market, since in the first quarter of 2005 European imports of textiles from China, increased at a higher percentage 200%, compared to the same period last year. Because of these developments, in the middle of April, the European Commission opened an investigation about the import of nine Chinese products. The reasons that the

European Commission argued were, among others:

1- To safeguard the interests of the European productive sector.
2- Addressing the claims of the European textile sector, particularly in countries with a significant weight in the sector, such as Spain, Italy or France.

China's response was swift. This country defended its right to export to the EU without any limitations or fees to trade. However, as the textile dispute he had with the EU also extrapolated to the United States, situating it in a bad negotiating position, since the majority of its textile exports destinations were the European and US markets. Finally, at the meeting on the 10th of June 2005 an agreement in which the rate of growth of Chinese textile imports was established until the end of 2007. This agreement struck ten of the thirty-five categories liberalized with the end of the ATV, and covered all the categories of greatest concern to the European textile industry (Journal El Mundo, 2005; Maiza Larrarte, 2009). Then, the following table summarizes the main events of the textile dispute between the EU and China that we have just explained.

Table 1: Chronology of the textile dispute between European Union and China. 2005

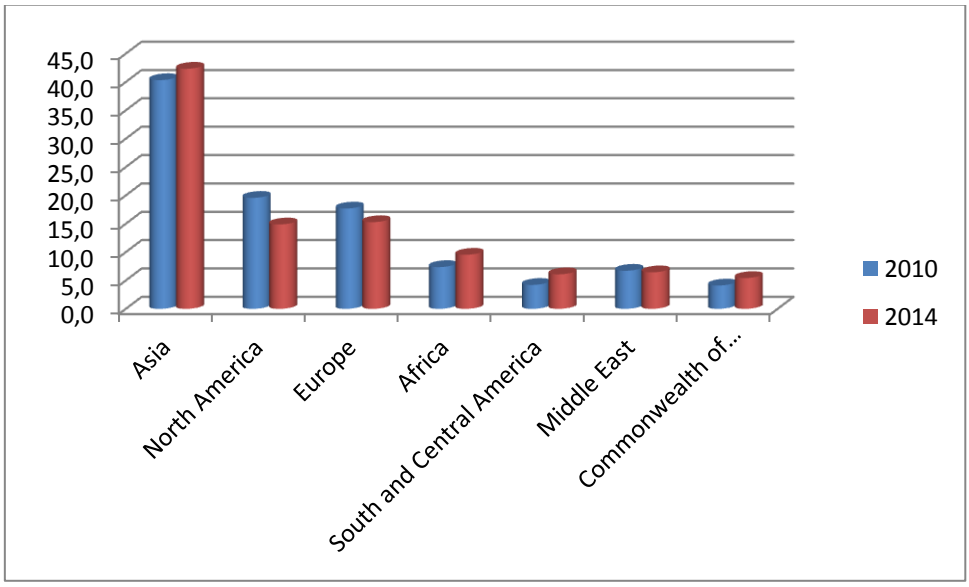
Month	Main Facts
January	Expire on global trade quota system imposed by WTO
April	The European Commission opens investigation about nine chinese textile products China rejects the initiative of the European Union to limit its exports of textiles
May	China announced that will raise their export tariffs 74 categories of Chinese textiles. The European Union takes its dispute with China by the textile to the World Trade Organization (WTO).
June	Brussels and China hold a key meeting to end textile conflict. China and the European Commission reach an agreement that ends the commercial crisis of textiles. China requests the European Union not to precipitate a commercial on similar to textiles footwear.
August	European Union blocks imports of Chinese blouses, in addition to those of jerseys and pants. The EU and China begins the first round of negotiations a "constructive and friendly" atmosphere. Mandelson (EU Commissioner) announces that it will ask the European Union unblock Chinese textile from customs.
September	The meeting on Chinese textiles between Twenty-five european countries finishes without agreement. The European Union and China can close a deal to resolve the textile dispute remains locked million garments from the Asian country.

Source: Own elaboration on data from El Mundo and Maiza Larrarte (2009).

From this agreement, and in recent years, trade in the textile industry has developed quicker. The most developed countries have been implementing a range of access

rules that have had the aim to protect the domestic products. China as a third world trade power (behind the European Union and the United States) and second in number of world exports has become the main focus of policy restrictions importation, especially today in the crisis economic. Meanwhile textile trade barriers (anti-dumping measures, anti-subsidy, among others) not only have seriously weakened the external competitiveness of the Chinese textile sector but also affected China's textile export companies. As we can see in the table below, exports of Chinese textiles to Europe and North America have declined, collecting the difference its Asian neighbors, Africa and South America, whose data will also be taken into account for the econometric analysis.

Figure 5: Evolution of Chinese Textile Exports: Share in region´s exports, 2010 and 2014 (in percentage)



Source: Own elaboration data from World Trade Organization (WTO), 2015.

From here, after explaining the various agreements and trade tensions between countries, we turn to ask: How has the achieved in 2005 agreement and the global economic crisis on exports and the flow of Chinese textile trade influenced to the Union European? What global indices has been better influence the behavior of these indicators? If we also considered including a sample of countries in different areas of the global economy would it change the outcome? In later and estimating a gravity model sections, we will try to answer the questions raised.

III. REVIEW OF LITERATURE.

The proposal to make in order to study the behavior of trade flows of Chinese textiles to the European Union, and mentioned in previous sections, will be the use of a gravity model. Therefore, it is necessary, first, to explain the different theoretical advances that have occurred in the concept of a gravity model. On the other hand, but not the least, the existence of previous studies that have studied the behavior of the textile sector make it essential to devote a section to mention different papers that have spoken about the subject. Consequently, in this section, we will discuss several articles that have studied the Chinese textile sector and the determinants of exports. Later, in the following sections, we will analyze the gravity model, explaining the various developments that have been achieved over the years in the concept model and its authors. With this information, I tend to offer a unique theoretical framework in order to justify my motivation on the content I have worked in the work.

Explained the progress of international trade between two economic zones in the last section, we will mention and discuss the different articles or studies that have been previously done about the Chinese textile sector, the European textile sector, and various studies that have tried to model a gravity equation to study a particular aspect of the textile industry, such as textile exports to different trading partners, imports, or trade flows between the two economic areas.

First, one of the articles that examine the determinants of Chinese textile exports, and conducted by the Institute of Textiles and Clothing of the Hong Kong Polytechnic University, is the Eve, Chan and Au (2006). These authors used a gravity model to study the determinants of exports of Chinese textiles. For this, and after entering the subject and explaining the chronology advances that have been done in the gravity model applied to the study of international trade, they proposed an equation in which the following variables are.

As a dependent variable, the logarithm of the value of Chinese exports, led the ten major trading partners, in millions of dollars. And as independent variables, and as a logarithm: China's GDP, GDP of importing countries, per capita GDP of China, per capita GDP of importing countries, geographical distance between the capitals of importing countries and China (whose capital is Beijing), Growth rate of the population of importing countries, Rate of exchange. Also, these authors included dummy variables, which will explain in the following paragraph.

First dummy, which is assigned a value of 1 if the importing countries are members of the Association of Southeast Asian Nations, and 0 if they are not. Second dummy, which is assigned a value of 1 if the importing countries are members of the European Union, and 0 if they are not, Third dummy, which is assigned a value of 1 if the importing countries are members of NAFTA. And finally, fourth dummy variable, which is assigned a value of 1 if the importing countries are members of the WTO.

Once the estimates were done, they obtained several conclusions about the behavior of exports of this sector, which can be summarized as follows. First, they found that the estimated results give support to the gravity model. This is because the in variables (cGDP), ln (GDP) and ln (PCGDP) showed, being positive and statistically significant, the positive rate of China's GDP and an increased national income by importers, causes an increase trade in textile products. Second, the growth rate of the population has a negative effect on trade flows between China and importing countries, since a larger population within Chinese borders make part of the production that went to export, have to stay at home to supply the domestic market. Finally, they also showed that the impact of the distance between countries, does not affect exports of Chinese textiles.

Second, another article we have found is the Thai Tri Do's article (2006). In this paper, the bilateral trade between Vietnam and twenty countries in Europe based on a gravity model in which data are used panel is analyzed, using a range of years from 1993 to 2004. The estimations indicate that the size of the economy, market size and real exchange rate of Vietnam and twenty European countries play an important role in bilateral trade between Vietnam and these countries. To carry out this study, the author proposed an econometric equation with the following variables:

Vietnam's trade, GDP of Vietnam, GDP of country j, Population of Vietnam, Population of country j, Real exchange rate between Vietnam and country j and distance in kilometers between Vietnam and country j. These variables are similar in comparison to the first paper that I have commented. However, in this article, they have included a history dummy.

The conclusion reached by the author, interpreting the results is that the flows of bilateral trade between Vietnam and the twenty-three European countries are conducted by the size of the economy, market size and volatility of the exchange rate. Although this article does not model the textile sector, it is interesting to observe how a gravity model applied in an econometric analysis study.

Then, also in that year, we found an article that examines the determinants of US textiles. This work, developed by Ofori Amponsah and Boadu (2006) used a gravity model to explain and discuss these behaviors. The variables included in the equation were:

Apparel imports by the U.S., GDP of U.S, per capita income of the exporting country i, exchange rate of the currency, price deflator (proxy for inflation rate) of the U.S, distance in kilometers between the exporting country i and the U.S. And as a dummy one variable which identifying whether country i was free from trade restraint.

With this study, the authors demonstrated that the gravity model can be estimated effectively by using time series data and cross section. Estimations of trade in textiles and clothing from the United States, and its main trading partners provide consistent and efficient results.

Then we found a very recent article published last year in the journal China Economic Review. Caporale, Sova and Sova (2015) examined the trade flows between China and its major trading partners in North America, Asia and Europe. The analysis was based on several indicators and the estimation of the gravity model. The authors applied methods recently developed with the main objective to take explicit account of the unobservable heterogeneity panel data. To begin with, the authors began introducing the subject to later raise the gravity model and econometric equation to estimate where the following variables include:

As the dependent variable, total trade between countries included. And as independent or explanatory variables that help to explain the behavior of the dependent variable, the authors included again (in accordance with the last papers analyzed): GDP, DGDPT as the difference in GDP per capita between partners, distance. With respect to dummies, LLK is a dummy variable that is equal to 1 if countries i and j are landlocked. WTO is a dummy variable that equals 1 if country i joined the WTO, and zero otherwise, CRS is a dummy variable for the global economic crisis equal to 1 for 2007–2008.

Once done the econometric analysis using as data the interval 1992-2012, and the analysis of the results, the authors concluded that China's international trade has grown since the implementation of liberalization policies, significantly increasing exports and imports. The study also showed that China has become a key country markets and, as a result, they obtained another important conclusion. Although OECD countries (European Union in particular, followed by the United States and Japan) remain its main partners, there is the evidence that Chinese trade with emerging economies (such as the case of India and Brazil) has increased. This article, although

does not model textile trade (as the above commented paper), is a good base in order to understand the present dominant position of the Asian giant in international trade.

Finally, another of the authors who have spoken about trade between the EU and China is Maiza Larrarte (2007). The purpose of the article, according to this author, was to analyze the trade policy of the European Union on the subject of analysis trade relations between the European Union and China. The author began describing his objectives for later separating the chronology of spectacular economic growth of China. In this section, the author gave different graphics and different data to help better to understand the article. Then the textile dispute between the EU and China takes importance as the author specifically detailed the various facts that faced both economic areas, as well as the causes and consequences of this conflict. Finally, Maiza Larrarte (2007) completed his study, mentioning the actions that the EU will carry out, to implement its new strategy to compete in a global world. Although the article does not take into account the evolution of the textile sector between the two areas, because of their age (this published in 2007), nor containing any econometric model is quite useful to understand the historical Sino-European trade relationship.

IV. ANALITICAL FRAMEWORK

Before starting the analytical framework of the equations we will estimate, we should point out some aspects. Since we will use a gravity model, we cannot forget to mention the traditional gravity model. In the following paragraphs, we will discuss the evolution of the concept model.

The traditional gravity model is based on Newton's law of gravitation, where a mass of goods and services supplied by the country of origin is attracted by a mass of demand for the country of destination. In its application to the study of international trade, the gravity model is the basic tool of empirical research in areas involving bilateral flows. Mainly measures the following factors:

- Impact on trade in trade costs, tariffs and non-tariff barriers, WTO / GATT, preferential trade agreements, monetary unions, logistics, etc.

- Analysis of the determinants of migration flows, tourism flows of FDI, capital movements.

The first authors to apply a gravity equation to explain this trend and as already mentioned above in the literature review are Pöyhönen (1963) and Tinbergen (1962). The last one developed and proposed the following equation:

$$Trade = B \times \frac{GDPe \times GDPi}{distance}$$

Where:

GDPe: GDP of the exporting country

GDPi: GDP of the importing country

Distance: distance between the exporting and importing country, it is used to measure many barriers to trade as they can be, transport costs, time step in transport, transaction costs, cultural distance (language, religion, values, customs, business practices) or paper borders.

Trade: total volume of trade between the two countries

Traditionally, during the last decades, many research papers and articles related to the analysis of trade flows contained a gravitational econometric model. Others, however, are based simply on several explanations about trade relations between various economic areas. In the following paragraph, we will present in chronological order the various authors who have studied the subject. All of that, with the sole purpose of being able to explain in more detail the progress and development of the gravity model applied to trade flows between countries.

Then, several articles studying trade flows between countries and containing a gravity model are mentioned. The first author, who presented a study of trade relations among countries and posed a gravity equation, was Tinbergen (1962) in his study "Shaping the World Economy: Suggestions for an International Economy Policy". Over the years, several authors, among which we highlight Pöyhönen (1963) in "A tentative model for the volume of trade Between Countries," and Linneman (1966) in his article "An Econometric Study of International Trade flows ", raised a similar model. These authors proposed a gravity model of trade based on the idea that trade between the two countries depended on the importer demand, the supply of exporters and switching costs. To this end, the gravity equation, incorporated several variables, which were intended to explain trade flows. In the equations are presented different variables, among which are:

- Variable income for the countries included in the study
- Variable population of the countries included in the study
- Variable distance between the countries included in the study

With all this, they purported to show that the trade volume between the two partners is directly related to national income and inversely related to the geographical distance (the more distance, the less trade). Later, from Anderson (1979), a large number of studies have attempted to test the theoretical foundation of the gravity model and its possible application to study international trade. To understand proposing these studies, we have to mention the main types of theoretical models studying international trade: The Ricardian model, the model Hescker-Ohlin (H-O) and the model of intra-industry trade. Each of them has its particularity, mainly in the way the product specialization is obtained in equilibrium. The differences between the models are:

- In the Ricardian model it is based on differences in productivity and technology across different countries.
- In the model Hekcher-Ohlin (H-O) it is based on the endogenous factor (supply)
- In the model of intra-industry trade it is based on increasing returns to scale at the level of the firm or company.

Anderson (1979) and, later, Bergstrand (1985 and 1989) conducted studies that were derived equations of gravity for trade models, including assumptions of product differentiation and increasing returns to scale. The first author proposed an alternative method of budget studies cross section. He concluded that the gravity equation could be obtained from the properties of systems spending. Meanwhile, Bergstrand (1985) presented empirical evidence supporting the theory that the gravity equation is a reduced form of the subsystem partial equilibrium, which is part of the general equilibrium model with differentiated nationwide products. Later, the same author, Bergstrand (1989) offered an analytical framework in order to understand the gravity equation, which was consistent with new theories of inter-industry trade and intra-industry.

Along that line, Helpman (1987) was characterized by using the model differentiated trade in products, in order to estimate the share of intra-industry trade. It concluded that the weight of the industry intra-industry trade was positively correlated with the size of the country (that is, the higher were a country, the greater the weight of this industry).

Years later, the gravity model was changed as dummies as explanatory variables were included in the gravity equation. However, we must bear in mind that some of the studies we have mentioned previously required the assumption of homothetic preferences for goods sold and the structure of transport costs (Anderson, 1979; Deardorff, 1995).

More recent studies seem to have overcome the above restrictions. Frankel et al (1998) indicated that the gravity equation "has gone from being an embarrassment of theoretical foundations, to become an embarrassment of riches." Finally, the use of the gravity model in international trade has also served to study and evaluate the impact of regional agreements, namely the edge effect on trade flows (Anderson and Van Wincoop, 2003) and the potential of trade (Baldwin, 1994).

In order to know what factors of trade are in the textile sector, which is experienced between the European Union and China we will present a gravity equation as a representation of the differences in trade flows in textiles during the 2008-2014. That is, consider the years 2008, 2009, 2010, 2011, 2012, 2013, 2014. There are many variables that can be included in the equation of gravity of our study, in order to contrast that variables have been relevant during the period world economic crisis. The first we can mention is the aggregate GDP, which is often used regularly in such studies. This variable can be used as a proxy to measure the level of demand in the importing country, as well as the level of supply of the exporting country. The higher the GDP in the importing country, increased import demand will be in it. Another variable that is often used is the per capita GDP, because it is a good indicator of the volume of trade. In the same line, the population variable is a possible alternative that can also be included. To end with the explanatory variables, we could not leave one of the most important variables in an equation of gravity and we have already mentioned: the variable distance. In our model, this variable will measure the distance between the exporting country (in this case China) and the importing country (countries of the European Union, in addition to a selected group of countries outside the Union). The expected sign of this variable will be negative, and the more distance there is between countries, more transport costs will be and it will lead to less trade. In addition to the variables mentioned, we can add dummy variables to collect other aspects, such as the tongue as a differentiator, the maritime area, that is, if any of the countries have coast, if have ports important containers, etc.

V) EMPIRICAL ANALYSIS

A) SPECIFICATION, DATA AND STATISTICS

To carry the estimates out, we will specify two models. To perform them we will use panel data. Sancho and Serrano (2004) pointed out that “Panel data are those that arise from the observation of the same cross-sectional or N individuals over time section. In them, information for each of the individuals is obtained, i = 1,2,3 .... N, for each moment of time t = 1,2,3 .... T, being a sample N * T observations”. Generally,

observed variables are identified for each individual, i, and moment of time, t: Yit. According also to Wooldridge (2006) "the panel data sets are most useful when constant unobservable aspects are controlled at the time of individuals, companies, which are thought that might be correlated with the explanatory variables in the model."

For the first equation, the dependent variable is the Chinese exports to the European Union on the data for the years 2008, 2009, 2010, 2011, 2012, 2013, 2014. The proposed equation is:

$$[1] \qquad \ln\_Exports = \ln POPj + \ln GDPj + \ln DIST + MARITIME$$

Firstly, we estimate a model with 196 observations, that is we will consider the twenty-eight countries of the European Union (Germany, Spain, UK, France, Italy, Netherlands, Poland, Sweden, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia and Slovenia) multiplied by the seven years considered (2008, 2009, 2010, 2011, 2012, 2013, 2014). Within this model, we will have as dependent variables Chinese textile exports to the countries of the European Union, and trade flows in the Chinese textiles to the European Union. We have obtained these data, measured in millions of dollars, from the database WITS (World Integrated Trade Solution) under the World Bank. According to the independent variables in this model we will include the population, GDP (at current prices) in the different countries and the varying distance, that will measure in kilometers the distance between China (via its capital Beijing) and individual European countries (through their state capitals). The data for the first two variables have been obtained from the database of the World Bank, World Development Indicators. The data in terms of distance, for their part, have been obtained through the CEPII data base. On the issue of including dummy variables in the econometric model, we considered several options. First, the vehicular language as a differentiator and secondly, the existence of significant in each of the countries considered seaports. For several reasons, we will only choose as dummy the second option mentioned. This is because the mother tongue as a differentiating factor will not be relevant since in China, where Chinese is mostly spoken, and in the European countries that we have considered, the following languages are spoken:

German, Spanish, English, French, Italian, Dutch, Polish, Austrian German, Swedish, Bulgarian, Croatian, Greek, Czech, Danish, Estonian, Finnish, Hungarian, Irish, Latvian, Lithuanian, Maltese, Portuguese, Romanian, Slovak, Slovenian.

However, we have considered the second option as a dummy variable because we believe it can be a differentiating factor in the textile trade. The variable, which we will call MARITIME, try to differentiate which countries have first class containers ports (which will be assigned a 1) and those without (allowance 0). In order to differentiate some other countries, we have taken as reference the Top50 list Containers prepared annually by the Journal of Commerce (JoC). It is assigned a 1 to those countries with at least one port in this list, and 0 to those not appearing in it.

With regard to the second equation, the dependent variable will be trade flows in textiles from China to the European Union. The explanatory variables are the same.

$$[2] \qquad \ln\_TradeFlows = \ln POPj + \ln GDPj + \ln DIST + MARITIME$$

Secondly, we now turn to the second model, which included 259 observations. To reach this amount we will consider the 28 countries of the European Union (as previously mentioned), plus a small group of countries, classified according to their geographical location. To estimate this model we will also consider as dependent on Chinese textile exports and trade flows of Chinese textile sector (equations 3 and 4) variables.

$$[3] \qquad \ln\_Exports = \ln POPj + \ln GDPj + \ln DIST + MARITIME$$

$$[4] \qquad \ln\_TradeFlows = \ln POPj + \ln GDPj + \ln DIST + MARITIME$$

Our aim is to expand the sample in a proportional manner, which considering a sample of each of the geographical areas that trade with China. Asia will not be included because of its close proximity to China.

North America: United States and Canada
Central America: Mexico
South America: Brazil and Argentina
Africa: Morocco and South Africa
Oceania: Australia and New Zealand

The methodology followed to prepare this set of panel data is the same as in the first model presented. More observations are included in different geographical areas in

order to make a small comparison between model 1 that considers European Union and China, the main motivation for this paper and the model 2 that considers countries in different geographical areas. You could say that the model 2 estimates the behavior of trade flows in the Chinese textile industry in a more comprehensive way and which include major countries in terms of GDP.

B) ECONOMETRIC RESULTS

To perform the empirical analysis, I will use Gretl software that is an open-source statistical package, mainly for econometrics. The name is an acronym for *G*nu *R*egression, *E*conometrics and *T*ime-series *L*ibrary. We will analyze the equations exposed in the last part using panel data and estimated by OLS (Ordinary Last Squares).

According to Wooldridge (2006), in statistics, ordinary least squares (OLS) or linear least squares is a method for estimating the unknown parameters in a linear regression model, with the goal of minimizing the differences between the observed responses in some arbitrary dataset and the responses predicted by the linear approximation of the data (visually this is seen as the sum of the vertical distances between each data point in the set and the corresponding point on the regression line - the smaller the differences, the better the model fits the data). The resulting estimator can be expressed by a simple formula, especially in the case of a single regressor on the right-hand side.

The OLS estimator is consistent when the regressors are exogenous and there is no perfect multicollinearity, and optimal in the class of linear unbiased estimators when the errors are homoscedastic and serially uncorrelated. Under these conditions, the method of OLS provides minimum-variance mean-unbiased estimation when the errors have finite variances. Under the additional assumption that the errors are normally distributed, OLS is the maximum likelihood estimator. OLS is used in economics (econometrics), political science and electrical engineering (control theory and signal processing), among many areas of application. The Multi-fractional order estimator is an expanded version of OLS.

Here we show the results of estimates by OLS (Ordinary Last Squares) models and above equations, using a total of 196 observations obtained by multiplying 28 (Germany, Spain, UK, France, Italy, Netherlands, Poland , Sweden, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia

and Slovenia) by 7 (years 2008, 2009, 2010, 2011, 2012, 2013 and 2014), commenting the results:

Table 2: Estimations of the first equation. Chinese textile exports

Model 1: Pooled OLS, using 196 observations
Included 28 cross-sectional units
Time-series length = 7
Dependent variable: l_Exports

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−5.92913	5.42133	−1.0937	0.2755	
l_POPj	0.312022	0.103032	3.0284	0.0028	***
l_GDPj	0.566474	0.096467	5.8722	<0.0001	***
l_DIST	−0.100592	0.623647	−0.1613	0.8720	
MARITIME	0.749603	0.171352	4.3746	<0.0001	***

Mean dependent var	13.06677	S.D. dependent var	1.693406
Sum squared resid	126.7253	S.E. of regression	0.814545
R-squared	0.773376	Adjusted R-squared	0.768630
F(4, 191)	162.9511	P-value(F)	2.02e-60
Log-likelihood	−235.3749	Akaike criterion	480.7497
Schwarz criterion	497.1403	Hannan-Quinn	487.3854
rho	0.979982	Durbin-Watson	0.084915

In this first estimate we can see several interesting aspects. The results tell us that an increase of 1% of the population of the countries of the European Union generates an increase of 0.312% in Chinese textile exports, confirming its relevance. If we talk about the variable GDP of European countries and the dummy variable you can also see that both have a positive influence and they are relevant to the behavior of Chinese textile exports. However, we find the first difficulty. Although the estimation results confirm us that the varying distance negatively influences the behavior of Chinese textile exports, this variable is not relevant. Next we estimate the same equation but putting in this case as the dependent variable to trade flows of Chinese textile sector. We will confirm whether the behavior of the distance variable has been punctual in the previous estimate or, on the contrary, the results remain similar.

Table 3: Estimations of the first equation. Chinese textile trade flows

Model 2: Pooled OLS, using 196 observations
Included 28 cross-sectional units
Time-series length = 7
Dependent variable: l_TradeFlows

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−10.9781	4.61535	−2.3786	0.0184	**
l_POPj	0.133258	0.0877142	1.5192	0.1304	
l_GDPj	0.711035	0.0821253	8.6579	<0.0001	***
l_DIST	0.377924	0.53093	0.7118	0.4774	
MARITIME	0.602802	0.145877	4.1323	<0.0001	***

Mean dependent var	13.19074	S.D. dependent var	1.611734
Sum squared resid	91.84593	S.E. of regression	0.693447
R-squared	0.818683	Adjusted R-squared	0.814886
F(4, 191)	215.6009	P-value(F)	1.20e-69
Log-likelihood	−203.8277	Akaike criterion	417.6555
Schwarz criterion	434.0461	Hannan-Quinn	424.2912
rho	0.959621	Durbin-Watson	0.104479

Unfortunately, the results of the estimates confirm us that the distance variable remains irrelevant. In this estimate only the GDP and the dummy MARITIME are relevant and achieve the expected sign. Therefore, as we have already discussed in section IV, we estimate a second econometric model, using a total of 259 observations obtained by multiplying 37 (Germany, Spain, UK, France, Italy, Netherlands, Poland, Sweden, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia, Slovenia, United States, Canada, Brazil, South Africa , Australia, Argentina, Mexico, Morocco and New Zealand) by 7 (years 2008, 2009, 2010, 2011, 2012, 2013 and 2014). What do we want with the inclusion of these countries? Apart from the comparison we want to do between the two samples, we also want the Distance variable to be relevant and to achieve the sign described in the gravity equation. Here we present and discuss the results:

Table 4: Estimations of the second equation. Chinese textile exports

Model 3: Pooled OLS, using 259 observations
Included 37 cross-sectional units
Time-series length = 7
Dependent variable: l_Exports

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−6.23653	2.13787	−2.9172	0.0038	***
l_POPj	0.210278	0.0751534	2.7980	0.0055	***
l_GDPj	0.701199	0.0650755	10.7752	<0.0001	***
l_DIST	−0.26502	0.234942	−1.1280	0.2604	
MARITIME	0.457305	0.129778	3.5237	0.0005	***

Mean dependent var	13.44010	S.D. dependent var	1.723253
Sum squared resid	153.7107	S.E. of regression	0.777920
R-squared	0.799374	Adjusted R-squared	0.796215
F(4, 254)	253.0100	P-value(F)	2.59e-87
Log-likelihood	−299.9377	Akaike criterion	609.8754
Schwarz criterion	627.6596	Hannan-Quinn	617.0257
rho	0.975916	Durbin-Watson	0.077181

In comparison with the first estimate, we can conclude that the results are similar. Although the inclusion of additional countries has helped to improve the estimate (have a higher R-squared), we keep encountering the difficulty of the first two estimates: The distance Variable is still not significant. It is true that the negative sign is greater, plus the p-value is much smaller. However, the meaningful variable is not achieved (even 10%). We present the results of the behavior's estimation of trade flows in the Chinese textile sector including 259 observations.

Table 5: Estimations of the second equation. Chinese textile trade flows

Model 4: Pooled OLS, using 259 observations
Included 37 cross-sectional units
Time-series length = 7
Dependent variable: l_TradeFlows

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−8.84113	1.90592	−4.6388	<0.0001	***
l_POPj	0.0646913	0.0669996	0.9655	0.3352	
l_GDPj	0.808191	0.0580151	13.9307	<0.0001	***
l_DIST	−0.010821	0.209451	−0.0517	0.9588	
MARITIME	0.394965	0.115698	3.4138	0.0007	***

Mean dependent var	13.56892	S.D. dependent var	1.667595
Sum squared resid	122.1663	S.E. of regression	0.693520
R-squared	0.829725	Adjusted R-squared	0.827044
F(4, 254)	309.4264	P-value(F)	2.42e-96
Log-likelihood	−270.1930	Akaike criterion	550.3859
Schwarz criterion	568.1701	Hannan-Quinn	557.5362
rho	0.958273	Durbin-Watson	0.088342

Related to what was discussed above, the results of this estimation are similar to last estimation with 196 observations. GDP and MARITIME variables are positive and significant (as in the results of Table 3). And with regard to the variable distance, it remains not significant, but now has a negative sign (in estimating Table 3 was positive sign).

In short, the results meet the expected signs of the gravity model. With regard to the performance of exports and trade flows in the Chinese textiles to the EU, these variables depend positively on the behavior of GDP, of the existing population and whether any of the EU countries have an important container port. However, we have found a variable that although the sign is negative in the model that predict the behavior of exports, is not relevant. This phenomenon is mainly due to the distance between the different countries of the European Union that is very similar. As we have included the 28 countries with their respective data distance from Beijing (capital of China) it is understandable that this variable is not significant. Consequently, this has been the main motivation for estimating a second econometric model in which, in addition, we include data from different countries in different geographical areas of the world. With the inclusion of these countries we wanted to get the distance variable relevant, since the distance of these territories with China is greater. However, although the sign of this variable is negative in comparison to the two dependent variables and the p-value is smaller than in the first econometric model, the insignificance remains its fundamental characteristic. For future studies of this way, with the aim that achieving the variable distance is relevant, it would be appropriate to choose a sample of countries of the European Union, not all of them. Although estimating the first model could be the case that the variable distance remained no significant, in the second model we could achieve our purpose, since the weight of the twenty-eight European countries would condition the estimate.

VI. CONCLUSIONS

Due to the results in different estimates by Ordinary Least Squares (OLS) for both variables as exports and as trade flows variable, we can say that the forecasts we did in the previous paragraph are accomplished. During the economic crisis that has affected the world economy, the textile sector was not immune to the decline of trade (especially in the halt of trade in 2009).

After evaluating the determinants of textile exports and trade flows of Chinese textiles to the countries of the European Union first, and then the sum of these countries with a sample of states of different geographical areas, the main assumptions that have been proposed in the sections devoted to the gravity model are achieved. First, they have been obtained some results in which income levels (via GDP) have a positive effect on trade in textiles. Second, although it has not given us significance, the distance between countries has a negative effect on textile trade flows.

The main objective of this study was to explain the behavior of textile trade through a gravity equation for exports and flows of Chinese trade to countries of the European Union, analyzing the determinants that influence the behavior of both variables. The model main gravity is based on the concept of gravitational force, as an analogy between trade and attracting masses, whose mass is associated with the economic weight of individual countries as a resistance element, which in its application to international trade , it is represented by geographical distance as a proxy for transport costs.

The results show that the coefficients of the variables included in the four equations of gravity are expected signs and are relevant. Only the distance variable is not significant. However, the reasons for this outcome and possible solutions that could be implemented in future studies to transform this evidence have already been explained. The negative value of this coefficient shows that, the greater geographical distance between countries the lower trade will develop between them.

According to the dependent variables in the equations of gravity, we were able to compare and observe the determinants that positively and negatively affect Chinese exports (to the EU and subsequently adding a sample of additional countries) and trade flows (the sum of exports and imports) in the textile sector.

There are different lines of action, apart from those mentioned in previous sections, which could improve the analysis of trade between the two geographical areas considered in this final thesis. Due to the short period of time it has taken for this

project, it has not been investigated in excess inclusion of variables that required a deeper research, something that naturally require more time analysis we have provided. We could talk about several performances, which we summarize below. First, to fulfill a more disaggregated approach that would focus on technological differences and possibly the introduction of variables such as value added. And secondly, and to finish, the introduction of trade policy instruments (such as tariffs, administrative barriers, subsidies, etc) in the model specification that could frame more precisely the rules that influence the strategies and measures adopted by the business partners.

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VIII. APPENDICES

To sum up, in this part, I will show other tables, figures and explanations that help us to understand the paper that I have had. I will include tables that have important data for estimate econometric equations, and tables with interesting data that I could not include in the first paragraphs of the paper. This appendix has two points. In the first point, I will include de main tables that I have used for the estimate econometric equations. And finally, in the second part, I will show other interesting tables and figures that help us to understand this paper.

Table A1: Database of econometric analysis. Textile exports, imports and trade flows of China to European Union and selected group of countries (in Thousand $)

Country	Years	Exports	Imports	Trade Flows
Germany	2008	7561076	324704,64	7885780,64
Germany	2009	7263415	322615,05	7586030,05
Germany	2010	9606555	467544,8	10074099,8
Germany	2011	12150503	559546,76	12710049,76
Germany	2012	9759637	531299	10290936
Germany	2013	10267922	570628	10838550
Germany	2014	11033577	627610	11661187
Spain	2008	3384824	62100	3446924
Spain	2009	3442919	68183,62	3511102,62
Spain	2010	4016700	101959,34	4118659,34
Spain	2011	4584199	149460,6	4733659,6
Spain	2012	4148706	158232	4306938
Spain	2013	4501257	144946	4646203
Spain	2014	4957193	120391	5077584
UK	2008	6006523	172233	6178756
UK	2009	5370707	162844,74	5533551,74

Country	Years	Exports	Imports	Trade Flows
UK	2010	6382071	193837,4	6575908,4
UK	2011	7475897	271843,7	7747740,7
UK	2012	7676171	291566	7967737
UK	2013	9014190	304284	9318474
UK	2014	11187747	329416	11517163
France	2008	3882960	271992	4154952
France	2009	3903264	223546,01	4126810,01
France	2010	4812148	300683,15	5112831,15
France	2011	5321205	383145,3	5704350,3
France	2012	4712418	370282	5082700
France	2013	5322456	433267	5755723
France	2014	5884161	523220	6407381
Italy	2008	5230465	838497,21	6068962,21
Italy	2009	4600655	705435,18	5306090,18
Italy	2010	5772481	878999,7	6651480,7
Italy	2011	6545357	1252811,7	7798168,7
Italy	2012	5000927	1367342	6368269
Italy	2013	5238841	1472227	6711068
Italy	2014	5718821	1575722	7294543
Netherlands	2008	3323464	82886	3406350
Netherlands	2009	2895426	72191,12	2967617,12
Netherlands	2010	3621164	90684,03	3711848,03
Netherlands	2011	4347117	106983,2	4454100,2
Netherlands	2012	3774215	93416	3867631
Netherlands	2013	4621594	117802	4739396
Netherlands	2014	5980887	127909	6108796
Poland	2008	942062	15204	957266
Poland	2009	796340	12646	808986
Poland	2010	961816	11806,46	973622,46
Poland	2011	1347936	15937,76	1363873,76
Poland	2012	1389889	14651,5	1404540,5
Poland	2013	1551155	13962	1565117
Poland	2014	1713533	18903	1732436
Sweden	2008	844798,22	16783,58	861581,8
Sweden	2009	731267,49	12978,85	744246,34

Country	Years	Exports	Imports	Trade Flows
Sweden	2010	946621,17	17063,74	963684,91
Sweden	2011	1229735,44	16910,15	1246645,59
Sweden	2012	1111717,49	14347,37	1126064,86
Sweden	2013	1222512,6	17283,99	1239796,59
Sweden	2014	1293921,71	16978,98	1310900,69
Austria	2008	157260,34	100256,82	257517,16
Austria	2009	125429,94	120521,79	245951,73
Austria	2010	146710,05	130715,86	277425,91
Austria	2011	192521,35	189533,16	382054,51
Austria	2012	159090,71	227117,48	386208,19
Austria	2013	167848,38	208191,8	376040,18
Austria	2014	190609,73	231743,95	422353,68
Belgium	2008	1842911,54	87606,48	1930518,02
Belgium	2009	1763441,82	74834,33	1838276,15
Belgium	2010	2126180,86	116498,53	2242679,39
Belgium	2011	2699736,77	188548,23	2888285
Belgium	2012	2158708,32	119659,16	2278367,48
Belgium	2013	2202471,98	144666,7	2347138,68
Belgium	2014	2587367,5	159509,55	2746877,05
Bulgaria	2008	78783,62	7727,28	86510,9
Bulgaria	2009	47124,51	11413,57	58538,08
Bulgaria	2010	51111,26	16537,99	67649,25
Bulgaria	2011	102751,35	28500,47	131251,82
Bulgaria	2012	116571,6	30261,7	146833,3
Bulgaria	2013	125002	37913,54	162915,54
Bulgaria	2014	137792,02	43030,59	180822,61
Croatia	2008	511437,27	2868,91	514306,18
Croatia	2009	293638,59	2260,99	295899,58
Croatia	2010	269480,34	2672,67	272153,01
Croatia	2011	266513	4412,7	270925,7
Croatia	2012	189105,99	3368,84	192474,83
Croatia	2013	160550,84	4103,81	164654,65
Croatia	2014	150750,17	4945,06	155695,23
Cyprus	2008	29908,57	469,59	30378,16
Cyprus	2009	21701,73	4,25	21705,98

Country	Years	Exports	Imports	Trade Flows
Cyprus	2010	19823,76	516,3	20340,06
Cyprus	2011	24377,18	5,72	24382,9
Cyprus	2012	24851,81	12,1	24863,91
Cyprus	2013	50753,45	35,4	50788,85
Cyprus	2014	27672,03	39,45	27711,48
Czech Republic	2008	266091,16	8752,14	274843,3
Czech Republic	2009	213595,83	3825,87	217421,7
Czech Republic	2010	258005,02	6498,71	264503,73
Czech Republic	2011	339781,14	13372,71	353153,85
Czech Republic	2012	288759,77	20716,54	309476,31
Czech Republic	2013	312363,22	16035,26	328398,48
Czech Republic	2014	407266,63	19928,87	427195,5
Denmark	2008	1171411,52	12033,51	1183445,03
Denmark	2009	1022742,71	7463,47	1030206,18
Denmark	2010	1235046,94	8947,16	1243994,1
Denmark	2011	1404526,15	10685,24	1415211,39
Denmark	2012	1317586,94	9498,28	1327085,22
Denmark	2013	1356703,65	10115,98	1366819,63
Denmark	2014	1559643,48	12566,57	1572210,05
Estonia	2008	91568,98	207,57	91776,55
Estonia	2009	55808,89	274,83	56083,72
Estonia	2010	121240,49	396,98	121637,47
Estonia	2011	158998,39	221,98	159220,37
Estonia	2012	150477,45	772,35	151249,8
Estonia	2013	133158,98	786,75	133945,73
Estonia	2014	136103,51	565	136668,51
Finland	2008	566613,71	17640,22	584253,93
Finland	2009	510921,38	10982,98	521904,36

Country	Years	Exports	Imports	Trade Flows
Finland	2010	651141,83	12611,25	663753,08
Finland	2011	837708,07	19191,02	856899,09
Finland	2012	851939,71	14299,83	866239,54
Finland	2013	721776,64	15156,06	736932,7
Finland	2014	653224,34	16011,65	669235,99
Greece	2008	471406,31	12004,66	483410,97
Greece	2009	398777,59	8534,4	407311,99
Greece	2010	407948,01	8726,25	416674,26
Greece	2011	423523,69	79583,9	503107,59
Greece	2012	358912,88	99108,34	458021,22
Greece	2013	358596,95	59276,76	417873,71
Greece	2014	461120,95	13301,12	474422,07
Hungary	2008	148534,77	3748,27	152283,04
Hungary	2009	139639,02	2799,28	142438,3
Hungary	2010	162872,35	6588,16	169460,51
Hungary	2011	195525,04	14945,94	210470,98
Hungary	2012	165344,11	19397,23	184741,34
Hungary	2013	174185,98	22006,73	196192,71
Hungary	2014	210654,35	25005,77	235660,12
Ireland	2008	293420,2	9173,54	302593,74
Ireland	2009	316660,25	4616,71	321276,96
Ireland	2010	372421,27	5579,11	378000,38
Ireland	2011	381991,15	13711,23	395702,38
Ireland	2012	334886,78	14055,07	348941,85
Ireland	2013	270503,67	12997,74	283501,41
Ireland	2014	332276,94	12168,89	344445,83
Latvia	2008	71654,76	813,07	72467,83
Latvia	2009	50937,59	667,52	51605,11
Latvia	2010	106745,8	353,84	107099,64
Latvia	2011	137060,51	1321,03	138381,54
Latvia	2012	163793,78	737,87	164531,65
Latvia	2013	155750,59	753,6	156504,19
Latvia	2014	167888,03	778,26	168666,29
Lithuania	2008	103577,4	3917,99	107495,39
Lithuania	2009	84526,1	2163,61	86689,71

Country	Years	Exports	Imports	Trade Flows
Lithuania	2010	129612,21	1116,37	130728,58
Lithuania	2011	166068,76	2114,08	168182,84
Lithuania	2012	177651,63	3431,45	181083,08
Lithuania	2013	204230,91	3929,09	208160
Lithuania	2014	207584,77	3442,73	211027,5
Luxembourg	2008	16259,32	33225,92	49485,24
Luxembourg	2009	10368,21	34049,36	44417,57
Luxembourg	2010	14948,2	45361,72	60309,92
Luxembourg	2011	13523,77	34081,25	47605,02
Luxembourg	2012	18985,47	26686,93	45672,4
Luxembourg	2013	12600,46	18708,52	31308,98
Luxembourg	2014	11859,66	24672,75	36532,41
Malta	2008	39224,5	7648,28	46872,78
Malta	2009	114725,49	5349,62	120075,11
Malta	2010	203868,48	5896,04	209764,52
Malta	2011	397232,28	11346,96	408579,24
Malta	2012	345164,32	9475,69	354640,01
Malta	2013	383322,31	8333,08	391655,39
Malta	2014	389640,26	3833,44	393473,7
Portugal	2008	238986,9	42743,36	281730,26
Portugal	2009	270824,69	47042,49	317867,18
Portugal	2010	401095,78	58427,28	459523,06
Portugal	2011	437755,47	88478,78	526234,25
Portugal	2012	371273,6	112409,68	483683,28
Portugal	2013	444067,17	148765,26	592832,43
Portugal	2014	558905,74	160313,51	719219,25
Romania	2008	326282,57	50824,47	377107,04
Romania	2009	286265,51	55144,89	341410,4
Romania	2010	301237,5	70530,21	371767,71
Romania	2011	427694,52	121105,55	548800,07
Romania	2012	450413,95	132863,46	583277,41
Romania	2013	446428,28	151472,62	597900,9
Romania	2014	463840,78	175184,51	639025,29
Slovakia	2008	62814,44	4982,41	67796,85
Slovakia	2009	65665,99	3196,41	68862,4

Country	Years	Exports	Imports	Trade Flows
Slovakia	2010	96850,37	3564,04	100414,41
Slovakia	2011	159871,43	6854,14	166725,57
Slovakia	2012	138882,91	8710,85	147593,76
Slovakia	2013	341045,62	8719,48	349765,1
Slovakia	2014	206877,47	13642,55	220520,02
Slovenia	2008	131240,87	4481,84	135722,71
Slovenia	2009	98918,86	5164,91	104083,77
Slovenia	2010	112419,21	4912,85	117332,06
Slovenia	2011	244342,34	5403,73	249746,07
Slovenia	2012	267591,9	3771,53	271363,43
Slovenia	2013	258574,24	5384,81	263959,05
Slovenia	2014	239642,07	4735,76	244377,83
United States	2008	23303462	2608347	25911809
United States	2009	24619756	1712944,34	26332700,34
United States	2010	31479126	3057749	34536875
United States	2011	35086659	4176522,3	39263181,3
United States	2012	36227605	4962925	41190530
United States	2013	39010744	3816050	42826794
United States	2014	41949706	2524825	44474531
Canada	2008	3434771,6	33589,11	3468360,71
Canada	2009	2978476,25	35662,27	3014138,52
Canada	2010	3457843,49	36322,49	3494165,98
Canada	2011	3797877,66	35571,36	3833449,02
Canada	2012	3556609,31	31959,07	3588568,38
Canada	2013	3938765,37	27180,87	3965946,24
Canada	2014	3859932,19	25867,5	3885799,69
Brazil	2008	1610340,46	65162,44	1675502,9
Brazil	2009	1398261,52	85225,82	1483487,34
Brazil	2010	2440953	193586,18	2634539,18
Brazil	2011	3467234,87	631553,45	4098788,32
Brazil	2012	3631970,2	838206,08	4470176,28
Brazil	2013	4012141,08	354462,68	4366603,76
Brazil	2014	4443835,87	319001,84	4762837,71
South Africa	2008	1520430,83	86343,9	1606774,73
South Africa	2009	1577606,29	110496,21	1688102,5

Country	Years	Exports	Imports	Trade Flows
South Africa	2010	2309216,83	115824,47	2425041,3
South Africa	2011	2696679,4	146994,45	2843673,85
South Africa	2012	2781469,86	200184,56	2981654,42
South Africa	2013	2804691,74	207913,07	3012604,81
South Africa	2014	2664428,87	212165,7	2876594,57
Australia	2008	3196396,83	1485226,3	4681623,13
Australia	2009	2964411,34	1241021,34	4205432,68
Australia	2010	3652290,49	1861625,44	5513915,93
Australia	2011	4325361,12	3678067,39	8003428,51
Australia	2012	4584214,25	3844811,96	8429026,21
Australia	2013	4867538,43	3674138,02	8541676,45
Australia	2014	5234942,15	2622234,54	7857176,69
Argentina	2008	428113,82	40549,02	468662,84
Argentina	2009	390949,77	29982,98	420932,75
Argentina	2010	657938,22	61277,5	719215,72
Argentina	2011	1001986,43	87531,02	1089517,45
Argentina	2012	818817,42	59341,15	878158,57
Argentina	2013	672249,76	57936,13	748353,67
Argentina	2014	690417,54	70423,75	760841,29
Mexico	2008	1347798,38	83680,97	1431479,35
Mexico	2009	864966,2	45129,24	910095,44
Mexico	2010	1267124,55	78611,5	1345736,05
Mexico	2011	1885981,65	143264,02	2029245,67
Mexico	2012	2170865,19	198968,9	2369834,09
Mexico	2013	2560183,6	134797,44	2694981,04
Mexico	2014	3196493,42	74765,53	3271258,95
Morocco	2008	533759,48	15490,53	549250,01
Morocco	2009	455668,53	22765,31	478433,84
Morocco	2010	551384,35	40394,84	591779,19
Morocco	2011	704000,73	53000,67	757001,4
Morocco	2012	677858,37	58883,07	736741,44
Morocco	2013	662725,8	76087,86	738813,66
Morocco	2014	523641,69	93870,08	617511,77
New Zealand	2008	481227,66	149053,8	630281,46
New Zealand	2009	429813,62	138822,79	568636,41

Country	Years	Exports	Imports	Trade Flows
New Zealand	2010	536986,38	199220,35	736206,73
New Zealand	2011	728398,22	313962,93	1042361,15
New Zealand	2012	713735,59	299649,41	1013385
New Zealand	2013	769440,86	332240,89	1101681,75
New Zealand	2014	857961,56	338112,33	1196073,89

Source: Own elaboration on database from WITS World Bank

Table A2: Database of econometric analysis. GDP (at market prices) and Population of European Union and selected group of countries

Country	Years	GDP	Population
Germany	2008	3,75237E+12	82110097
Germany	2009	3,41801E+12	81902307
Germany	2010	3,4173E+12	81776930
Germany	2011	3,75746E+12	81797673
Germany	2012	3,53962E+12	80425823
Germany	2013	3,74532E+12	80645605
Germany	2014	3,86829E+12	80889505
Spain	2008	1,63499E+12	45954106
Spain	2009	1,49907E+12	46362946
Spain	2010	1,43167E+12	46576897
Spain	2011	1,48792E+12	46742697
Spain	2012	1,33995E+12	46773055
Spain	2013	1,36926E+12	46620045
Spain	2014	1,38134E+12	46404602
UK	2008	2,79338E+12	61806995
UK	2009	2,31458E+12	62276270
UK	2010	2,4035E+12	62766365
UK	2011	2,5949E+12	63258918
UK	2012	2,63047E+12	63700300
UK	2013	2,7123E+12	64106779
UK	2014	2,98889E+12	64510376
France	2008	2,92347E+12	64374990

Country	Years	GDP	Population
France	2009	2,69383E+12	64707044
France	2010	2,64699E+12	65027512
France	2011	2,8625E+12	65342776
France	2012	2,68142E+12	65639975
France	2013	2,81025E+12	65925498
France	2014	2,82919E+12	66206930
Italy	2008	2,39188E+12	58826731
Italy	2009	2,18624E+12	59095365
Italy	2010	2,12675E+12	59277417
Italy	2011	2,27809E+12	59379449
Italy	2012	2,07463E+12	59539717
Italy	2013	2,13354E+12	60233948
Italy	2014	2,14116E+12	61336387
Netherlands	2008	9,36228E+11	16445593
Netherlands	2009	8,57933E+11	16530388
Netherlands	2010	8,3644E+11	16615394
Netherlands	2011	8,93702E+11	16693074
Netherlands	2012	8,28947E+11	16754962
Netherlands	2013	8,64169E+11	16804432
Netherlands	2014	8,79319E+11	16854183
Poland	2008	5,30185E+11	38125759
Poland	2009	4,36476E+11	38151603
Poland	2010	4,79243E+11	38042794
Poland	2011	5,28742E+11	38063255
Poland	2012	5,00228E+11	38063164
Poland	2013	5,24059E+11	38040196
Poland	2014	5,44967E+11	37995529
Austria	2008	4,27612E+11	8321496
Austria	2009	3,97594E+11	8343323
Austria	2010	3,90235E+11	8363404
Austria	2011	4,29011E+11	8391643
Austria	2012	4,07373E+11	8429991
Austria	2013	4,28699E+11	8479375
Austria	2014	4,36888E+11	8545908
Belgium	2008	5,18626E+11	10709973

Country	Years	GDP	Population
Belgium	2009	4,84553E+11	10796493
Belgium	2010	4,83577E+11	10895586
Belgium	2011	5,26975E+11	11047744
Belgium	2012	4,9778E+11	11128246
Belgium	2013	5,21402E+11	11182817
Belgium	2014	5,31547E+11	11231213
Bulgaria	2008	54666642734	7492561
Bulgaria	2009	51783454184	7444443
Bulgaria	2010	49939168133	7395599
Bulgaria	2011	56949835052	7348328
Bulgaria	2012	53576670828	7305888
Bulgaria	2013	55626359256	7265115
Bulgaria	2014	56717054674	7223938
Croatia	2008	70481451814	4434508
Croatia	2009	62703095751	4429078
Croatia	2010	59680624422	4417781
Croatia	2011	62249565359	4280622
Croatia	2012	56485301967	4267558
Croatia	2013	57770884729	4255689
Croatia	2014	57113389357	4238389
Cyprus	2008	27493064742	1077010
Cyprus	2009	25593262401	1090486
Cyprus	2010	25247424011	1103685
Cyprus	2011	27089174646	1116644
Cyprus	2012	24940600822	1129303
Cyprus	2013	24057251749	1141652
Cyprus	2014	23226158986	1153658
Czech Republic	2008	2,35205E+11	10384603
Czech Republic	2009	2,0573E+11	10443936
Czech Republic	2010	2,07016E+11	10474410
Czech Republic	2011	2,27313E+11	10496088

Country	Years	GDP	Population
Czech Republic	2012	2,06442E+11	10510785
Czech Republic	2013	2,08328E+11	10514272
Czech Republic	2014	2,0527E+11	10525347
Denmark	2008	3,52592E+11	5493621
Denmark	2009	3,19762E+11	5523095
Denmark	2010	3,19811E+11	5547683
Denmark	2011	3,41499E+11	5570572
Denmark	2012	3,22277E+11	5591572
Denmark	2013	3,35878E+11	5614932
Denmark	2014	3,42362E+11	5638530
Estonia	2008	24194038377	1337090
Estonia	2009	19652486802	1334515
Estonia	2010	19494662252	1331475
Estonia	2011	23168793439	1327439
Estonia	2012	23135266649	1322696
Estonia	2013	25246787742	1317997
Estonia	2014	26485161116	1314545
Finland	2008	2,83742E+11	5313399
Finland	2009	2,51499E+11	5338871
Finland	2010	2,47815E+11	5363352
Finland	2011	2,73657E+11	5388272
Finland	2012	2,56706E+11	5413971
Finland	2013	2,6919E+11	5438972
Finland	2014	2,72217E+11	5461512
Greece	2008	3,54461E+11	11077841
Greece	2009	3,3E+11	11107017
Greece	2010	2,99379E+11	11121341
Greece	2011	2,8778E+11	11104899
Greece	2012	2,45671E+11	11045011
Greece	2013	2,3951E+11	10965211
Greece	2014	2,35574E+11	10869637
Hungary	2008	1,57095E+11	10038188

Country	Years	GDP	Population
Hungary	2009	1,29774E+11	10022650
Hungary	2010	1,30094E+11	10000023
Hungary	2011	1,39931E+11	9971727
Hungary	2012	1,27176E+11	9920362
Hungary	2013	1,34402E+11	9893082
Hungary	2014	1,38347E+11	9863183
Ireland	2008	2,74714E+11	4489544
Ireland	2009	2,35387E+11	4535375
Ireland	2010	2,20076E+11	4560155
Ireland	2011	2,41785E+11	4576794
Ireland	2012	2,24652E+11	4586897
Ireland	2013	2,3826E+11	4598294
Ireland	2014	2,50814E+11	4615693
Latvia	2008	35542093261	2177322
Latvia	2009	26144610787	2141669
Latvia	2010	23743309486	2097555
Latvia	2011	28385281828	2059709
Latvia	2012	28023276372	2034319
Latvia	2013	30241650060	2012647
Latvia	2014	31286809075	1993782
Lithuania	2008	47850551149	3198231
Lithuania	2009	37440673478	3162916
Lithuania	2010	37132564255	3097282
Lithuania	2011	43505562065	3028115
Lithuania	2012	42852204396	2987773
Lithuania	2013	46412093986	2957689
Lithuania	2014	48353937110	2932367
Luxembourg	2008	55144865973	488650
Luxembourg	2009	50386496249	497783
Luxembourg	2010	52351655629	506953
Luxembourg	2011	58697386711	518347
Luxembourg	2012	55986712368	530946
Luxembourg	2013	61794506556	543360
Luxembourg	2014	64873963098	556319
Malta	2008	8554293727	409379

Country	Years	GDP	Population
Malta	2009	8099400961	412477
Malta	2010	8163355021	414508
Malta	2011	9302635890	416268
Malta	2012	8882509104	419455
Malta	2013	9642848650	423374
Malta	2014	9752848650	427364
Portugal	2008	2,62008E+11	10558177
Portugal	2009	2,43746E+11	10568247
Portugal	2010	2,38318E+11	10573100
Portugal	2011	2,4488E+11	10557560
Portugal	2012	2,16368E+11	10514844
Portugal	2013	2,26073E+11	10457295
Portugal	2014	2,30117E+11	10401062
Romania	2008	2,08182E+11	20537875
Romania	2009	1,67423E+11	20367487
Romania	2010	1,67998E+11	20246871
Romania	2011	1,85363E+11	20147528
Romania	2012	1,72044E+11	20058035
Romania	2013	1,91587E+11	19983693
Romania	2014	1,99044E+11	19904360
Slovakia	2008	1,00077E+11	5379233
Slovakia	2009	88661440678	5386406
Slovakia	2010	89254492715	5391428
Slovakia	2011	97919816514	5398384
Slovakia	2012	93049721684	5407579
Slovakia	2013	98033841689	5413393
Slovakia	2014	1,00249E+11	5418649
Slovenia	2008	55589849128	2021316
Slovenia	2009	50244790220	2039669
Slovenia	2010	48016463576	2048583
Slovenia	2011	51287600778	2052843
Slovenia	2012	46239992125	2057159
Slovenia	2013	47675804618	2059953
Slovenia	2014	49491440620	2061980
Sweden	2008	5,13966E+11	9219637

Country	Years	GDP	Population
Sweden	2009	4,29657E+11	9298515
Sweden	2010	4,88379E+11	9378126
Sweden	2011	5,63113E+11	9449213
Sweden	2012	5,43881E+11	9519374
Sweden	2013	5,78742E+11	9600379
Sweden	2014	5,7109E+11	9696110
United States	2008	1,47186E+13	304093966
United States	2009	1,44187E+13	306771529
United States	2010	1,49644E+13	309347057
United States	2011	1,55179E+13	311721632
United States	2012	1,61632E+13	314112078
United States	2013	1,67681E+13	316497531
United States	2014	1,7419E+13	318857056
Canada	2008	1,54262E+12	33245773
Canada	2009	1,37084E+12	33628571
Canada	2010	1,61401E+12	34005274
Canada	2011	1,7888E+12	34342780
Canada	2012	1,83272E+12	34751476
Canada	2013	1,83896E+12	35155499
Canada	2014	1,78539E+12	35543658
Brazil	2008	1,69582E+12	194769696
Brazil	2009	1,66702E+12	196701298
Brazil	2010	2,20887E+12	198614208
Brazil	2011	2,61457E+12	200517584
Brazil	2012	2,46066E+12	202401584
Brazil	2013	2,46577E+12	204259377
Brazil	2014	2,41664E+12	206077898
South Africa	2008	2,8677E+11	49344228

Country	Years	GDP	Population
South Africa	2009	2,95936E+11	50055701
South Africa	2010	3,75349E+11	50791808
South Africa	2011	4,16597E+11	51553479
South Africa	2012	3,97386E+11	52341695
South Africa	2013	3,66244E+11	53157490
South Africa	2014	3,50141E+11	54001953
Australia	2008	1,05456E+12	21249200
Australia	2009	9,26564E+11	21691700
Australia	2010	1,14225E+12	22031750
Australia	2011	1,38992E+12	22340024
Australia	2012	1,53748E+12	22728254
Australia	2013	1,56395E+12	23117353
Australia	2014	1,45468E+12	23470118

Source: Own elaboration on data from World Bank

Table A3. Database of econometric analysis. Distance (in km) between China and European Union countries (including selected group of countries outside EU)

Country	Years	Distance
Germany	2008	7364
Germany	2009	7364
Germany	2010	7364
Germany	2011	7364
Germany	2012	7364
Germany	2013	7364
Germany	2014	7364
Spain	2008	9232
Spain	2009	9232
Spain	2010	9232
Spain	2011	9232
Spain	2012	9232
Spain	2013	9232

Country	Years	Distance
Spain	2014	9232
UK	2008	8149
UK	2009	8149
UK	2010	8149
UK	2011	8149
UK	2012	8149
UK	2013	8149
UK	2014	8149
France	2008	8226
France	2009	8226
France	2010	8226
France	2011	8226
France	2012	8226
France	2013	8226
France	2014	8226
Italy	2008	8135
Italy	2009	8135
Italy	2010	8135
Italy	2011	8135
Italy	2012	8135
Italy	2013	8135
Italy	2014	8135
Netherlands	2008	7830
Netherlands	2009	7830
Netherlands	2010	7830
Netherlands	2011	7830
Netherlands	2012	7830
Netherlands	2013	7830
Netherlands	2014	7830
Poland	2008	6948
Poland	2009	6948
Poland	2010	6948
Poland	2011	6948
Poland	2012	6948
Poland	2013	6948

Country	Years	Distance
Poland	2014	6948
Sweden	2008	6708
Sweden	2009	6708
Sweden	2010	6708
Sweden	2011	6708
Sweden	2012	6708
Sweden	2013	6708
Sweden	2014	6708
Austria	2008	7460
Austria	2009	7460
Austria	2010	7460
Austria	2011	7460
Austria	2012	7460
Austria	2013	7460
Austria	2014	7460
Belgium	2008	7961
Belgium	2009	7961
Belgium	2010	7961
Belgium	2011	7961
Belgium	2012	7961
Belgium	2013	7961
Belgium	2014	7961
Bulgaria	2008	7352
Bulgaria	2009	7352
Bulgaria	2010	7352
Bulgaria	2011	7352
Bulgaria	2012	7352
Bulgaria	2013	7352
Bulgaria	2014	7352
Croatia	2008	7639
Croatia	2009	7639
Croatia	2010	7639
Croatia	2011	7639
Croatia	2012	7639
Croatia	2013	7639

Country	Years	Distance
Croatia	2014	7639
Cyprus	2008	7065
Cyprus	2009	7065
Cyprus	2010	7065
Cyprus	2011	7065
Cyprus	2012	7065
Cyprus	2013	7065
Cyprus	2014	7065
Czech Republic	2008	7456
Czech Republic	2009	7456
Czech Republic	2010	7456
Czech Republic	2011	7456
Czech Republic	2012	7456
Czech Republic	2013	7456
Czech Republic	2014	7456
Denmark	2008	7201
Denmark	2009	7201
Denmark	2010	7201
Denmark	2011	7201
Denmark	2012	7201
Denmark	2013	7201
Denmark	2014	7201
Estonia	2008	6364
Estonia	2009	6364
Estonia	2010	6364
Estonia	2011	6364
Estonia	2012	6364
Estonia	2013	6364
Estonia	2014	6364
Finland	2008	6322
Finland	2009	6322
Finland	2010	6322
Finland	2011	6322
Finland	2012	6322
Finland	2013	6322

Country	Years	Distance
Finland	2014	6322
Greece	2008	7617
Greece	2009	7617
Greece	2010	7617
Greece	2011	7617
Greece	2012	7617
Greece	2013	7617
Greece	2014	7617
Hungary	2008	7340
Hungary	2009	7340
Hungary	2010	7340
Hungary	2011	7340
Hungary	2012	7340
Hungary	2013	7340
Hungary	2014	7340
Ireland	2008	8282
Ireland	2009	8282
Ireland	2010	8282
Ireland	2011	8282
Ireland	2012	8282
Ireland	2013	8282
Ireland	2014	8282
Latvia	2008	6517
Latvia	2009	6517
Latvia	2010	6517
Latvia	2011	6517
Latvia	2012	6517
Latvia	2013	6517
Latvia	2014	6517
Lithuania	2008	6562
Lithuania	2009	6562
Lithuania	2010	6562
Lithuania	2011	6562
Lithuania	2012	6562
Lithuania	2013	6562

Country	Years	Distance
Lithuania	2014	6562
Luxembourg	2008	7942
Luxembourg	2009	7942
Luxembourg	2010	7942
Luxembourg	2011	7942
Luxembourg	2012	7942
Luxembourg	2013	7942
Luxembourg	2014	7942
Malta	2008	8410
Malta	2009	8410
Malta	2010	8410
Malta	2011	8410
Malta	2012	8410
Malta	2013	8410
Malta	2014	8410
Portugal	2008	9668
Portugal	2009	9668
Portugal	2010	9668
Portugal	2011	9668
Portugal	2012	9668
Portugal	2013	9668
Portugal	2014	9668
Romania	2008	7059
Romania	2009	7059
Romania	2010	7059
Romania	2011	7059
Romania	2012	7059
Romania	2013	7059
Romania	2014	7059
Slovakia	2008	7419
Slovakia	2009	7419
Slovakia	2010	7419
Slovakia	2011	7419
Slovakia	2012	7419
Slovakia	2013	7419

Country	Years	Distance
Slovakia	2014	7419
Slovenia	2008	7715
Slovenia	2009	7715
Slovenia	2010	7715
Slovenia	2011	7715
Slovenia	2012	7715
Slovenia	2013	7715
Slovenia	2014	7715
United States	2008	10988
United States	2009	10988
United States	2010	10988
United States	2011	10988
United States	2012	10988
United States	2013	10988
United States	2014	10988
Canada	2008	10450
Canada	2009	10450
Canada	2010	10450
Canada	2011	10450
Canada	2012	10450
Canada	2013	10450
Canada	2014	10450
Brazil	2008	17322
Brazil	2009	17322
Brazil	2010	17322
Brazil	2011	17322
Brazil	2012	17322
Brazil	2013	17322
Brazil	2014	17322
South Africa	2008	11706
South Africa	2009	11706
South Africa	2010	11706
South Africa	2011	11706
South Africa	2012	11706
South Africa	2013	11706

Country	Years	Distance
South Africa	2014	11706
Australia	2008	9007
Australia	2009	9007
Australia	2010	9007
Australia	2011	9007
Australia	2012	9007
Australia	2013	9007
Australia	2014	9007
Argentina	2008	19266
Argentina	2009	19266
Argentina	2010	19266
Argentina	2011	19266
Argentina	2012	19266
Argentina	2013	19266
Argentina	2014	19266
Mexico	2008	12458
Mexico	2009	12458
Mexico	2010	12458
Mexico	2011	12458
Mexico	2012	12458
Mexico	2013	12458
Mexico	2014	12458
Morocco	2008	9941
Morocco	2009	9941
Morocco	2010	9941
Morocco	2011	9941
Morocco	2012	9941
Morocco	2013	9941
Morocco	2014	9941
New Zealand	2008	10779
New Zealand	2009	10779
New Zealand	2010	10779
New Zealand	2011	10779
New Zealand	2012	10779
New Zealand	2013	10779

Country	Years	Distance
New Zealand	2014	10779

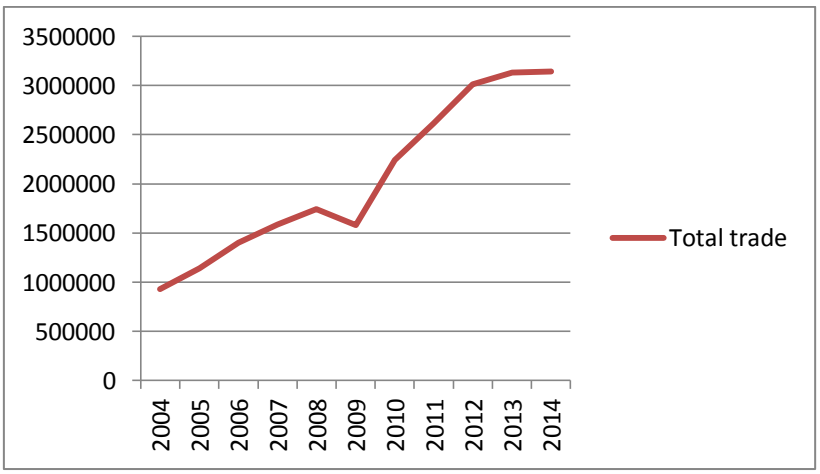
Source: Own elaboration on data from Cepii

Table A4: Summary of functional forms involving logarithms

Model	Dependent variable	Independent variable	Interpretation of β_1
level-level	y	x	$\Delta y = \beta_1 \Delta x$
level-log	y	log(x)	$\Delta y = (\beta 1/100)\%\Delta x$
log-level	log(y)	x	$\%\Delta y = (100\beta_1)\Delta x$
log-log	log(y)	log(x)	$\%\Delta y = \beta_1 \%\Delta x$

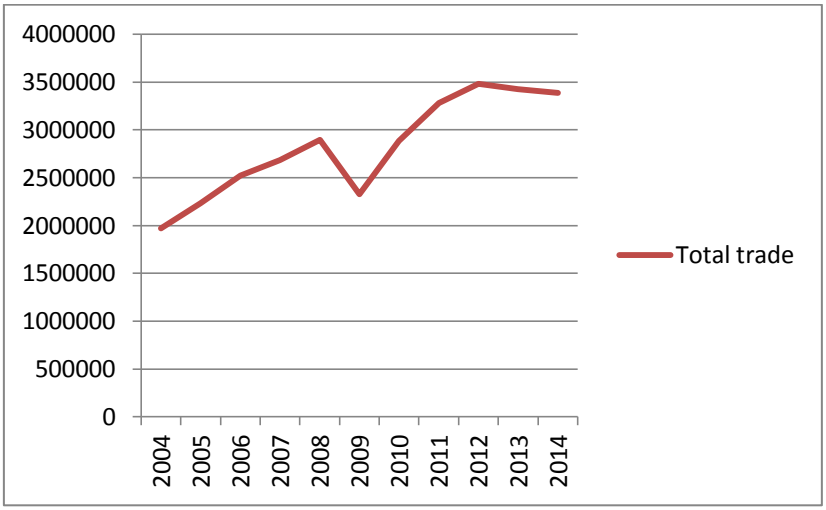
Source: Wooldridge (2006)

Figure A1: China, Total Trade, 2004-2014 annual data (Value Mio €)



Source: Own elaboration on data from European Commission- Directorate-General for Trade

Figure A2: European Union, Total Trade: 2004-2014 annual data (Value Mio €)



Source: Own elaboration on data from European Commission- Directorate-General for Trade