

Dissertação de Mestrado:
**“The IPE of the Chinese Ascension as
a Key Global Player”**

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INTRODUCTION

The Chinese ascension as a key global player is, undoubtedly, one of the most important events in International Relations (IR) in the late 20th century and beginning of the 21st together with the end of the Cold War. Since 1978, the People's Republic of China (China from now on) has shifted from an autarkic relationship with the international system, characterized by low levels of trade, scientific exchange, foreign investment, tourism, and shipping, to become a State that, for a large country, is very engaged in global commerce and quite active in transnational exchanges of all sorts (Zweig, 2002; Mantzopoulos & Shen, 2011). Indeed, it can be acknowledged that no other State in history has internationalized as fast as China did during the last four decades¹.

Motivated by the emergence of China as a key state in the international system, during the candidate Master's program in the Institute of International Relations at the University of São Paulo, his initial line of research was the International Political Economy of the commercial relations of China with Brazil and Argentina. Eventually, his line of research broadened, leaving Argentina and Brazil in a second plane. The result of it are two papers that deal with the Chinese ascension as a key global player in two key areas: trade and investments.

The former, studies China's role played within the global trade regime, more precisely, the WTO in which China acceded in 2001. The latter, studies Chinese role in the energetic sector, particularly, the recent phenomenon of Outward Foreign Direct Investments in the energetic sector.

Both papers have been enriched by peer reading, international congress presentations, and (sometimes painful) rejections in journal submissions. Currently, the paper entitled "China and the WTO: Will the Market Economy Status make any difference after 2016?" has been accepted for publication in *The Chinese Economy Journal*. The paper entitled "China's Quest for Energy through FDI: New Empirical Evidence" has been submitted to the *Journal of Chinese Economic and Business Studies* and is still waiting for a final response.

The candidate is aware that both papers could still be improved even after their publications, and thus the readers may find weaknesses that can be worked on. It is important mentioning that the content of these two papers will be very useful during the candidate's doctoral program and that the databases will be used again to retrieve new empirical information. On the other hand, the process of publishing has been extremely positive for learning how to transmit ideas clearly,

¹ *Internationalization* is here defined as the expanded flows of goods, services, and people across State boundaries, thereby increasing the share of transnational exchanges relative to domestic ones, along with a decline in the level of regulation affecting those flows (Zweig, 2002 p.3).

adapt the content to the particularities and target of each journal, deal with reviewers and editors demands, and get to know the vast number of journals that publish papers related to China.

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China and the WTO: Will the Market Economy Status make any difference after 2016?

Abstract: China's Protocol of Accession to the World Trade Organization, signed on December 2001, allowed other country members to consider China as a Non Market Economy (NME) until the end of 2016. The aim of this paper is to answer the following question: Can the Market Economy Status (MES) Recognition be measured in its compliance? The *proxy* used for that compliance was the number of antidumping investigations initiated per country. The expectation is that countries recognizing Chinese MES would initiate fewer antidumping investigations than countries still treating China as a Non Market Economy. This would explain why the Chinese Government has been campaigning vigorously since 2001 to gain MES among its economic partners. Using count-models we demonstrate that MES had a positive impact in reducing the number of antidumping investigations against Chinese products.

Key words: Non-Market Economy Status; antidumping; World Trade Organization (WTO); China.

JEL Classification: F13, F14, F55.

Number of words: 8525

China e a OMC: O estatuto de economia de mercado irá fazer alguma diferença após 2016?

Resumo: O Protocolo de Adesão à Organização Mundial do Comércio da China, assinado em dezembro de 2001, permitiu a outros países membros considerarem a China como uma economia “não de mercado” até o final de 2016. O objetivo deste trabalho é responder a seguinte pergunta: Pode o reconhecimento de economia de mercado (REM) ser medido em seu *compliance*? O *proxy* utilizado para o *compliance* foi o número de investigações antidumping iniciadas por país. A expectativa é que os países que reconhecem o status de economia de mercado da China iniciem menos investigações antidumping do que aqueles que ainda tratam a China como uma economia “não de mercado”. Isso explicaria por que o governo chinês tem feito campanha desde 2001 para ganhar REM entre seus parceiros económicos. A utilização de modelos de contagem demonstra que o REM teve um impacto positivo na redução do número de investigações antidumping contra produtos chineses.

Palavras-chave: Estatuto de economia de mercado; antidumping; Organização Mundial do Comércio (OMC); China

Classificação JEL: F13, F14, F55.

Número de palavras: 8525

1. Introduction

On September 2001, during the eighteenth session of the Working Party on China –and a few weeks before China’s accession to the World Trade Organization (WTO) became official-, Long Yongtu, the Head of the Chinese Delegation, said

“Just as President Jiang Zemin pointed out recently WTO accession is a strategic decision made by the Chinese Government under economic globalization and is in line with China’s reform and opening-up policy and the goal of establishing a socialist market economic system” (WTO 2013).

The concept of “socialist market economy system” remains a complex one as it is conceptually inherently contradictory. Within WTO, “transition economies” are given Non-Market Economy (NME) status. Prior to China’s accession, ten such transition economies joined the WTO (Qin 2003). In the case of China its Protocol of Accession, signed on December 2001, it allowed other country members to consider China as a NME until the end of 2016.

Even though WTO members can still treat China as a NME, some countries have already recognized China’s Market Economy Status (MES). Then, it is possible to compare those that have already recognized it with those that have not to study the effect of that effect on trade relations. What are the political-economic implications of this recognition and what would change after 2016 in relation to China are two questions that this paper attempts to answer. The objective of the paper is to test the compliance of the recognition of China as a market economy on the number of antidumping investigations against Chinese products.

Do antidumping investigations increase, decrease, or neither? If there is an effect, then the policy implication will be that after 2016 this effect will be expected to be extended to all WTO members. The expectation is that, due to a more transparent method for calculating normal values, countries would initiate fewer investigations than countries that still treating China as a NME. That is, it is expected that countries comply with the recognition.

Brown (2010) demonstrates that there is no prima facie evidence that WTO membership since 2001 has thus far limited the incidence of China exporter’s facing new investigations of dumping behavior. However, there is no work up to date on the effect of the MES recognition on the investigations for dumping. While the entry into the WTO might have had no effect, the MES did. This is the main contribution of this paper. The reason why antidumping investigations and NME are connected is found on Article VI of GATT, and in the way dumping is calculated for NME. Without MES, Chinese products are calculated based on the market prices of a “substitute country”, --often with much higher production costs than China—as the benchmark instead of its

real costs, making Chinese companies vulnerable to antidumping investigations (Shambaugh & Murphy 2013, p. 320) .

Nonetheless, the concept of NME is disconnected from the economic system adopted by a country and this is reflected by the fact that some NMEs are members of WTO (Cuba, for example); some Market Economies are still non-members of WTO (Monaco, for example), and some members have not been qualified as either Market Economies or NME, and therefore have an unclear legal status (Cattaneo & Braga 2009). The decision remains mostly political. The best example is China since it has NME status with some WTO members and, simultaneously, a MES with others.

By 2013 more than 30 countries have recognized China's Market Economy Status (MES), including New Zealand, Nigeria, Russia, Pakistan, Venezuela, Chile, Brazil, Argentina, Australia, Peru, Antigua and Barbuda, Benin, Costa Rica, Djibouti, South Africa, Togo , Ukraine, Guyana, Armenia, Kyrgyzstan and the 10 member countries of the Association of Southeast Asian Nations (ASEAN). However, neither the European Union¹ nor the United States have granted MES to China yet.

The Memorandums of recognition of Chinese MES are non-regulated agreements, which lack controlling institutions and depend on the “good will” of the parties. The risk of cheating is high, due to an inexistence of punishment. Theoretically, the deeper an agreement is, the greater the punishments required to maintain compliance is in mixed motive games (Downs et al. 1996). However, as Keohane mentions, “among international organizations, the WTO stands out as having quite authoritative and precise rules and a relatively good record of eventual compliance with those rules by governments. So far, through diplomatic finesse and compromise the WTO has avoided outright refusals” (Keohane 2002, p.227).

Furthermore, China pertaining to the WTO since 2001 bolsters legitimacy to the memorandums, due to the fact that they are based on China's Protocol of Accession to the organization. Recognizing China as a market economy within WTO would act as a “Seal of Approval”. Institutions can create regularized expectations of members' future behavior and therefore promote more stable patterns of behavior among members (Prime 2006; Gray 2009). Then, it is possible to expect a measurable effect in the compliance of the MES recognition, through the antidumping investigations.

¹ Shambaugh and Murphy (2013) mention that “So anxious is Beijing to win MES from the European Union that Premier Wen Jiabao argued during a visit to Europe in September 2011 that China's willingness to buy European debt to help stabilize European economies mired in the sovereign debt crisis was contingent on China being granted MES by the EU (p. 320).

The structure of the paper is as follows: First, the paper offers a concise justification of the study before moving into the literature discussion where the paper makes its contribution. The review of the literature is divided into two sub-areas: (a) that which studies China-WTO negotiations before 2001; and (b) that which studies the content of China's Accession Protocol and the MES within WTO. Following, the paper answers what a NME is and what does it imply to be a NME within WTO. From this discussion the main hypotheses of the paper arises. Subsequently, is presented the model's definition and the methodology employed to measure the recognition of China as a market economy on the antidumping investigations is presented. Then, the results are presented and the cases of Argentina and Brazil are highlighted for being outliers in the findings. Finally, some concluding remarks are provided.

2. China's entry to WTO and its MES

The literature on China's entry to the WTO is extensive and has generated more than 20,000 scholarly contributions (Cattaneo & Braga 2009). It can be divided into two sub-areas: (a) The one that addresses the historical evolution of the relationship between GATT and WTO with China; (b) The one that analyzes the content of China's Accession Protocol and the MES within WTO. This latter sub-area is the most relevant for this article and where it makes its contribution. This section will briefly review both subsections before deepening into the MES implications for the Chinese economy.

a. Historical evolution of the relationship between GATT and WTO with China

The 15 years of negotiations between China and the WTO have been studied in depth and there is a rich literature about it. It is also necessary to mention that the history of China's WTO has its background in the GATT, in which it was a founding member (Halveson 2004). Bhala (1999) and Halveson (2004) point out that it is necessary to go back to 1948 to truly understand this complex history during which profound changes happened into the bosom of China.

There are three main historical reasons for this complex process to take so many years and Table 1 summarizes the main historical facts discussed by the authors. First of all, and most importantly, the communist revolution and the Taiwan's split.

Second, the different positions existing within domestic politics in China. As Douglas Newkirk –a former Assistant United States Trade Representative- commented, “[t]he GATT wasn't written with a socialist market economy in mind. The China's transition from a communist to a market

economy, and the often-repeated, oxymoronic declaration by its elder leaders that it has a ‘socialist market economy’ complicated the entry process” (Bhala 1999, p.1480).

The third reason that complicated the negotiations was whether China would gain admission as a developing or developed country. United States insisted that China join the WTO as a developed country which implicated heavier concessions from China. After fifteen years of negotiations, by the end of the millennium the pro-accession forces in the Chinese government gained the domestic battle arguing that the advantages of membership would outweigh the disadvantages (Yinqing & Gang 2000). The bilateral agreement with the US and the EU in 1999 and 2000, respectively, routed the long awaited entry of China into the WTO which was finalized in December 2001.

Table 1: historical evolution of the relationship between GATT and WTO with China

| Year | Event |
|------|--|
| 1948 | GATT goes into effect (China is a contracting Party) |
| 1950 | China withdraws from GATT |
| 1965 | Taiwan joins GATT as a non-voting observer |
| 1971 | China became a full member of the General Assembly and permanent member of the Security Council GATT revoked Taiwan's observer status |
| 1982 | China granted observer status in GATT |
| 1986 | China notifies GATT of intent to renegotiate terms of membership Hong Kong becomes a GATT Contracting Party |
| 1987 | Working party on China's membership to GATT established |
| 1989 | Discussions of China's membership suspended until 1992 due to Tiananmen crisis |
| 1992 | Working party on Taiwan's Accession established |
| 1994 | Uruguay round of trade negotiations completed (China is signatory) |
| 1995 | WTO enters into force; China applies for accession to WTO |
| 1999 | United States and China sign bilateral agreement on China's accession |
| 2000 | U.S. Congress passes Permanent Normal Trade Relations (PNTR) legislation EU and China sign a bilateral agreement on China's accession |
| 2001 | China's accession to WTO becomes effective (Taiwan joins shortly thereafter) |

Source: Bhala (1999) and Halverson (2004).

The literature emphasizes that the history of China's accession to the WTO is marked by comings and goings (Bhala 1999; Halverson 2004; Cattaneo & Braga 2009; Brown 2010). As Bhala (1999) put it, the story itself is an epic saga, and no country seeking WTO membership –not even Saudi Arabia (which acceded in December 2005 after ten years of negotiations), Iran (which has not acceded yet and submitted its application in July 1996), and Russia (which acceded in August 2012 after 19 years of negotiations)- could possibly raise a more complex array of issues than China².

² For an interesting comparison of the Chinese and the Russian cases see Yin (2009).

In the same direction, Cattaneo & Braga (2009) point out that it took China more than fifteen years to complete the process, compared to less than three years for the Kyrgyz Republic which is also a NME. The China accession protocol consisted of a main text of 11 pages and 143 paragraphs incorporated by reference from the 77 pages Working Party Report, compared to a main text of no more than two pages of standardized provisions for some other countries' accession protocols.

b. Content of China's Accession Protocol and the Market Economy Status within WTO

As mentioned before, this second group of literature is the most relevant to this work. The reason is that papers that deal with the Accession Protocol studied in detail the treatment of China as a NME, and the provisions regarding the use of anti-dumping measures against Chinese products. Among the literature in this area stand out Qin (2003), Cattaneo & Braga (2009), Zang (2011), and Tietje & Nowrot (2011).

China's Protocol of Accession to the WTO, signed on December 2001, permitted other country members to consider China as a NME until the end of 2016. By the beginning of 2013 more than 30 countries have recognized China's MES but neither the European Union nor the United States have granted MES to China yet, and both apply the so-called surrogate or analogue country method to establish dumping, relying on price or production data from third countries (Zang 2011). Unlike any other WTO protocol of accession, "the China Protocol is not a standardized document. Instead, it contains a large number of special provisions that elaborate, expand, modify or derivate from the existing WTO agreements" (Qin 2003, p.489).

Qin (2003) focuses on a set of special provisions of the China Protocol: those that prescribe obligations exceeding the existing requirements of the WTO agreements, which she calls "WTO-plus" obligations. The major WTO-plus obligations undertaken by the Chinese government concern the following areas: (1) transparency, (2) judicial review, (3) uniform administration, (4) national treatment, (5) foreign investment, (6) market economy, and (7) transitional review. The most significant of such obligations include the obligation to let market forces determine prices in China, obligations not to influence State-Owned and State-Invested Enterprises, and obligation to liberalize foreign trade regime.

Section 9 of the Protocol prescribes an overall market economy obligation for China: the obligation to "allow prices for traded goods and services in *every sector* to be determined by market forces except for those specified in Annex 4 of the Protocol (emphasis added)" (Qin 2003, p.505). It has been historically a major challenge for the system to integrate centrally planned economies as the multilateral trading system is constructed with market economy assumptions.

“The problem of integrating NMEs into the system has been largely abated in the post-cold war era when most of the former centrally planned economies began transforming into market economies” (Qin 2003, p.504).

The problem, for the literature, lies in how to incorporate NMEs in respect to market principles of WTO treaties. Cattaneo & Braga (2009) argue that the accession process has created a “two-tier” membership or a “second class” of WTO citizens, and the interpretation of accession protocols has created a whole new branch of WTO law and jurisprudence. As Zang (2011) explains, China argued that section 15 of the Accession Protocol does not contain ‘an official recognition by China’ that it is an NME, but only a temporary and limited derogation from the rules in the Anti-Dumping Agreement on the determination of normal value in anti-dumping investigations initiated with respect to imports from China. However, it is clear that section 15 of the Accession Protocol is the major WTO authority for the special treatment towards China in Anti-dumping proceedings (p. 876).

Paragraphs 15(a) and (d) exclusively concern to the determination of normal value. While paragraph (a) contains special rules of determination of normal value in Anti-dumping investigation involving China, paragraph 15(d) in turn establishes that these special rules will expire in 2016 and set out certain conditions that may lead to early termination of these rules before 2016. For lawyers and governmental officials dealing with anti-dumping law and practice, the 11 December 2016 is certainly not a myth – it is reality.

From that date onwards, it will be almost impossible – at least from the perspective of WTO law – to make a determination of the normal value of products targeted by an antidumping proceeding on the bases of analogous third country methodology (Tietje & Nowrot 2011). This method is “extremely unfavorable for Chinese exports because the choice of a surrogate country is often perceived as arbitrary or inappropriate, and the resulting antidumping duties tend to be exceedingly high” (IBA 2010, p.5). As a consequence, the Chinese Government has been campaigning vigorously among its trading partners to gain MES before 2016.

3. NME Status and its impact on antidumping investigations

The general issue of the NME Status has been addressed substantially by Polouektov (2002); Qin (2003) and Shao (2008). Furthermore, Alford (1987), Shao (2008), Cattaneo & Braga (2009), Brown (2010), and Tietje & Nowrot (2011) have addressed the particular case of Chinese NME Status.

Polouektov addresses the case of Poland for being the first “orthodox” centrally planned economy to become a GATT contracting party in 1967, followed by Romania in 1971 and Hungary in 1973. After the collapse of the Soviet Union in 1991, former satellites moved from centrally-planned to market economies, formally becoming “transition economies”. In the immediate years after the WTO came into being, 10 more transition economies became Members recognizing special treatment in their Protocols of Accession³ (Polouektov 2002; Cattaneo & Braga 2009).

How are the concepts of NME and antidumping investigations connected? The NME issue has its roots in paragraph 1 of the antidumping Article VI of GATT 1994. There,

“It is recognized that, in the case of imports from a country which has a complete or substantially complete monopoly of its trade and where all domestic prices are fixed by the State, special difficulties may exist in determining price comparability for the purposes of paragraph 1, and in such cases importing contracting parties may find it necessary to take into account the possibility that a strict comparison with domestic prices in such a country may not always be appropriate” (Shao 2008, 13).

Through this provision, WTO Members explicitly recognize NME countries may need to be treated differently than market economies in antidumping cases.

The Anti-Dumping Agreement narrows down the range of possible options for calculating whether a particular product is being dumped (WTO, 2012) providing three methods to calculate a product’s “normal value” (GATT, 1994). (a) The main one is based on the price in the exporter’s domestic market. When it cannot be used (this is the case for NMEs), two alternatives are available: (b) the price charged by the exporter in another country, or (c) a calculation based on the combination of the exporter’s production costs, other expenses and normal profit margins.

Then, the consequences of not being granted MES would have a big impact on the investigation for dumping. For example, if China is accused of dumping car tires, the basic approach is to consider the price of car tires in China against the price of Chinese car tires in Europe. Because China does not have MES, Chinese domestic prices cannot be used as a reference. Instead, the initiator would use an analogue market: one which does have market economy status, and which is similar enough to China. United States is a popular analogue market, and for China sometimes Brazil and Mexico are also used. In this case, the price of car tires in the United States is regarded as the substitute for the price of car tires in China which of course is detrimental to China as the cost of labor is much lower.

China has allowed, through its protocol of accession, that WTO members may pursue a NME approach to the calculation of normal value and dumping margins, and of course, this method

³ Mongolia, Bulgaria, the Kyrgyz Republic, Latvia, Estonia, Albania, Croatia, Georgia, Lithuania and Moldova.

would not be used anymore if China was considered a market economy. It can be expected, thus, that recognizing Chinese MES would reduce the amount of antidumping measures initiated against this country.

This paper asks whether the recognition of Chinese MES by some countries has had any effect in new investigations of dumping behavior, using the latter as a *proxy* of the compliance with this recognition. To date, there is no work that has answered this question. The main hypothesis of this work (H_1) is that, even though the WTO accession by China has not led to a reduction in the use of Anti-Dumping measures (Brown 2010), recognition of market economy itself has had a positive effect in reducing measures against China.

Messerlin (2004) and Brown (2010) highlight that most of anti-dumping investigations and measures imposed are initiated by the so called four major traditional users (Australia, Canada, EU, and USA) and from six new intensive antidumping users which are developing economies (Argentina, Brazil, India, Mexico, South Africa, and Turkey). Both authors conclude that China is targeted much more by developing economies than by industrial countries. The ten most intensive Anti-Dumping users contributed 83 percent of the new investigations and 68 percent of the new measures imposed even as the total antidumping use by WTO members continues to grow, especially with the emergence of China itself as a major new user (Brown 2010, 8). Comparing the aggregated data of antidumping use against China during its pre- accession (1995–2001) versus post- accession (2002–2006) period, Brown (2010) concludes that there is no *prima facie* evidence that WTO membership has thus far limited the incidence of China exporter's facing new investigations of dumping behavior.

Accordingly to Polouektov, differential treatment generates contradictions with the principle of non-discrimination in the WTO. The preservation in the present circumstances of the long outdated NME concept constitutes an intentional disregard for world realities, which risks bringing back a “second class” membership and further erosion of the fundamentals of the multilateral trade framework. In contravention of the obligations under the WTO, a number of Members retained (“grandfathered”) or adopted a new the NME concept, thus deviating from the language of the Uruguay Round Anti-Dumping Agreement (Polouektov 2002, 3).

4. Empirical Analyses

The paper tests the hypothesis that the recognition of China as a Market Economy had a negative impact on the number of antidumping investigations initiated against Chinese products by countries that had recognized China before. To control the effect of the MES recognition on the use of antidumping investigations in the statistical model it tests two additional hypotheses. (H_2)

The higher the share of Chinese imports in local market, the better the chances of initiating an antidumping investigation against a Chinese product; and (H₃) the more open to trade a country is, the worse the chances of using antidumping measures. Table 2 presents the three hypotheses tested, and the expected effect of the variable chosen to operationalize each hypothesis. The three independent variables to test the three hypotheses are (a) Recognition of Chinese MES, (b) Share of Chinese imports to total imports, (c) Trade Openness.

Table 2: Hypotheses and independent variables in the model

| Independent Variables | Type | Expected effect on the Dependent Variable | Hypotheses |
|--|--------------------|---|--|
| Recognition of Chinese Market Economy Status | Dummy (0, 1) | Negative (-) | H₁ : Recognizing China as a Market Economy has a negative impact on the number of AD investigations initiated against Chinese products |
| Share of Chinese imports to total imports _(t-1) | Continuous [0 - 1] | Positive (+) | H₂ : The higher the share of Chinese imports in local market, the better the chances of initiating an AD measure against a Chinese product |
| Openness Index | Continuous [0 - ∞) | Negative (-) | H₃ : The more open a country is, the worse the chances of using antidumping measures |

Source: Elaborated by the authors.

a. Data sources

The statistic data used to build the three independent variables were taken from four databases: (a) Global Antidumping Database (GAD) which is part of the Temporary Trade Barriers Database (TTBD) World Bank and lead by Chad P. Brown (2007), (b) UNCTAD Trade Map - International Trade Centre UNCTAD/WTO (ITC), (c) UN Comtrade, (d) World Bank World Development Indicators.

GAD has been freely and publicly available since 2005, hosts detailed data on more than thirty different national governments' use of policies such as antidumping, global safeguards, China-specific transitional safeguard measures, and countervailing duties. The authors considered the 31 countries available in the GAD Database, using all the antidumping measures initiated by China per year. As can be seen in Table 3, not every country in the database recognizes Chinese MES.

Table 3: Countries considered in this paper

| Country | Available data | # of AD investigations against China | Recognized Chinese MES (Year) |
|-----------|----------------|--------------------------------------|-------------------------------|
| Argentina | 1993 -2011 | 79 | 2004 |
| Australia | 1989-2011 | 29 | 2005 |
| Brazil | 1988-2011 | 59 | 2004 |
| Canada | 1985-2011 | 35 | - |
| Chile | 1995-2011 | 1 | 2002 |

| | | | |
|---------------------|------------|-----|------|
| Colombia | 1991-2011 | 27 | - |
| Costa Rica | 1996-2011 | - | 2008 |
| European Union | 1978-2011 | 143 | - |
| India | 1992-2011 | 147 | - |
| Indonesia | 1996-2011 | 12 | 2004 |
| Israel | 1991-2011 | 7 | - |
| Jamaica | 2000-2011 | 1 | 2005 |
| Japan | 1991-2011 | 2 | - |
| Malaysia | 1995-2011 | 1 | 2004 |
| Mexico | 1987-2011 | 52 | - |
| New Zealand | 1995-2011 | 8 | 2004 |
| Pakistan | 2002-2011 | 10 | 2004 |
| Paraguay | 1999-2011 | - | - |
| Peru | 1992-2011 | 56 | 2004 |
| Philippines | 1994-2011 | 3 | 2004 |
| Poland* | 1995-2011 | 2 | - |
| South Africa | 1992-2011 | 46 | 2004 |
| South Korea | 1986-2011 | 27 | 2005 |
| Taiwan | 1984-2011 | 6 | - |
| Thailand | 1996-2011 | 14 | 2004 |
| Trinidad and Tobago | 1997- 2011 | 2 | - |
| Turkey | 1989-2011 | 28 | - |
| Ukraine | 1995-2011 | 6 | - |
| United States | 1980-2011 | 165 | - |
| Uruguay | 1997- 2011 | - | - |
| Venezuela | 1992-2011 | 3 | 2004 |

Source: Elaborated by the authors. (*) Poland is also included in European Union after 2004.

The UN Comtrade database was used to build the share of Chinese imports on total imports. The index was calculated with a lag of one year to take into account the assumption that there is a greater propensity to protect using an Anti-Dumping when the previous year's imports increased considerably.

Three units of analysis deserve a special note. Data for Taiwan is not available in UN Comtrade, so Trademap was used instead. Data for South Africa was not complete, so the index was built using data from its Department of Trade and Industry. Finally, data from the European Union was built in accordance to its expansions in 1981, 1986, 1990, 1995, 2004 and 2007 so Poland is considered as a unit before 2004. WTO statistics were used to take data on EU imports from the World.

World Bank Development Indicators provided information on Trade Openness, which is calculated as the sum of exports and imports of goods and services measured as a share of gross domestic product. Behind this variable is the assumption that more open countries tend to be less protective of its domestic industry.

The baseline model of this work can be summarized as:

$$\# \text{ AD investigations against China} = \beta_0 + \beta_1 \text{ MES Recognition} + \beta_2 \frac{\text{Imports from China}}{\text{Total Imports (t-1)}} + \beta_3 \text{ Trade (\% of GDP)} + \varepsilon_i$$

b. Data Analysis and Model Specification

This section analyzes the data, and afterwards tests which regression model best fits the research problem. The base model is simple and has only three independent variables to avoid overly confusing results, and collinearity amongst explanatory factors. As the relationship between the dependent and independent variables is nonlinear, an OLS model does not seem to be the best alternative. Another problem has to do with the assumption of homoscedasticity within it. The best model would be the one that can count how many times something has happened, so a Count Model would work better.

Gary King (1989) recognized that most empirical analyses in international relations are based on event count variables. Unfortunately, with few exceptions, scholars in international relations have neither designed nor exploited such methods. The most frequently used statistical model in this area, linear regression, makes the incorrect assumption that underlying continuous processes generate observations that are also continuous (King 1989, p.124).

In a previous paper (King 1988) explains these caveats:

“[...] there are several serious problems in using event count data with the OLS model. First, OLS assumes a linear relationship, $E(y|X) = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \dots$. This is an implausible functional form for two reasons: (1) it often results in predicted event counts that are less than zero and therefore meaningless. Moreover, a “truncated linear” model, where negative fitted values are forced to zero, makes unrealistic assumptions at and near the cutoff point. Furthermore, (2) it makes the unrealistic assumption that the difference between zero and one event occurring in a particular time interval is the same as the difference between, say, 20 and 21 events. Thus, the true relationship is not linear, and a linear approximation would not in most cases even be a reasonable working assumption.”
(King 1988, p.845)

Since this work deals with a cross sectional method instead of a times series one, it is working under the assumption that each year of the sample is independent from the others. The principle of independence holds that “the probability of an event occurring at time $t + 1$, given what has occurred up to time t , is independent of all previous history within a single observation period” (King 1989, p.127). Under the independence principle, antidumping investigations are not contagious, that is, the occurrence of an antidumping measure does not increase the probability of

future antidumping investigations. As they are initiated by private actors (companies, or chambers) it is not mistaken to hold onto this assumption.

Most of the years had one antidumping investigation against a Chinese product. The database omits years when there were no measures, so the database has no zeros. A useful place to begin is comparing predicted and observed values (Long 1997). The listed values in Table 4 are the observed and predicted probabilities for observing a country with 0 through 9 antidumping investigations in a given year.

Table 4. Observed and predicted probabilities

| Value | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Observed | 0 | 0.375 | 0.1654 | 0.1213 | 0.0772 | 0.0625 | 0.0588 | 0.0257 | 0.022 | 0.0183 |
| Predicted | 0.5311 | 0.129 | 0.1819 | 0.1891 | 0.1594 | 0.1153 | 0.0743 | 0.0441 | 0.0246 | 0.0133 |

Source: Elaborated by the authors.

The probabilities above show that the fitted Poisson distribution over-predicts 0s and under-predicts count 1. This pattern of over- and under-prediction is characteristic of fitting a count model that does not take into account *heterogeneity* among sample members in their rate μ (Long and Freese 2006). In order to choose the best fit count model two questions need to be answered: (a) How is the outcome variable distributed?, or How does the variance compare to the mean?, and (b) Does the outcome variable contain zeroes?, If not, why?

(a) Count variables indicate how many times something has happened. Poisson Regression (PRM), the most common count model works with a very strong assumption that the conditional variance equals the conditional mean. If this is not the case, Negative Binomial Regression (NBRM) can be used for over-dispersed count data, that is, when the conditional variance exceeds the conditional mean. (b) If the data generating process does not allow for any 0s, then a zero-truncated model (ZTPM) may be more appropriate.

It is necessary to test dispersion in the sample to observe whether Poisson Regression or NBRM has a better fit. As the database omits all the zeros—that is, it has no information when there are none antidumping investigations against a Chinese product- a truncated model probably is the best model to be used. Table 4 summarizes the count models tested in this section. Whether to know either if PRM or NBRM work better, several tests were run. First, plotted the observed variable together with PRM and NBRM. As a second test, compare the model residuals for PRM and NBRM. Third, compared Pearson Chi-Square statistic for both PRM and NBRM. The three tests have offered strong evidence for preferring NBRM over a PRM.

Table 5. Characteristics of the count models considered in the statistical test

| | |
|--|---|
| Poisson regression | It has a very strong assumption, that is, the conditional variance equals conditional mean. Data appropriate for Poisson regression do not happen very often. Nevertheless, Poisson regression is often used as a starting point for modeling count data and Poisson regression has many extensions. |
| Negative binomial regression | Negative binomial regression can be used for over-dispersed count data, that is when the conditional variance exceeds the conditional mean. It can be considered as a generalization of Poisson regression since it has the same mean structure as Poisson regression and it has an extra parameter to model the over-dispersion. |
| Zero-Truncated Poisson Regression | If the data generating process does not allow for any 0s, then a zero-truncated model may be more appropriate. |
| Zero-truncated Negative Binomial Regression | Zero-truncated negative binomial regression is used to model count data for which the value zero cannot occur and for which the conditional means are not equal to the conditional variances. That is, the data exhibit over dispersion. |

Source: (UCLA, 2012b)

Table 6 is a summary of the regression results for all the possible models. As can be seen, all of them have similar coefficients (except for OLS which was included to show its bias), and high statistical significance. Zero-truncated Negative Binomial Regression (ZTNBM) is the count model which shows the higher coefficients, and the lower z values. Among the four count models ZTNBM showed the best fit.

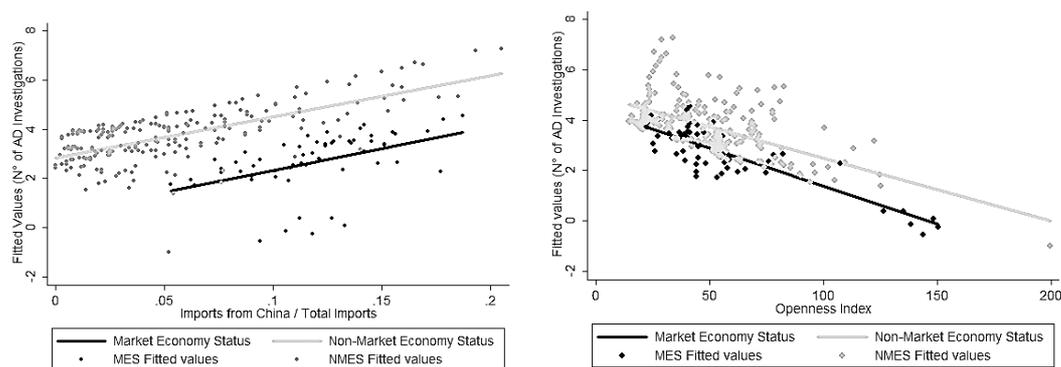
Table 6: Regression Results

| Dependent Variable: Number of AD investigations per year | (1) | (2) | (3) | (4) | (5) |
|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| | OLS | PRM | NBRM | ZTPRM | ZTNBM |
| Independent Variables: | Coefficient t-statistic | Coefficient t-statistic | Coefficient t-statistic | Coefficient t-statistic | Coefficient t-statistic |
| Recognition of Chinese Market Economy Status | -2.12*** (-3.66) | -0.59*** (-6.14) | -0.58*** (-4.09) | -0.68*** (-6.38) | -0.86*** (-3.59) |
| Share of imports from China to total imports (t-1) | 19.92*** -4.07 | 5.02*** -7.35 | 5.33*** -4.58 | 5.59*** -7.86 | 8.30*** -3.95 |
| Openness Index | -0.03*** (-4.13) | -0.01*** (-7.36) | -0.01*** (-5.18) | -0.01*** (-7.90) | -0.02*** (-4.95) |
| Constant | 4.22*** -8.74 | 1.54*** -18.94 | 1.50*** -12.61 | 1.58*** -17.91 | 1.16*** -4.84 |
| Lalpha | | | | | |
| Constant | | | -1.03*** (-7.04) | | 0.43 -1.33 |
| Number of observations | 272 | 272 | 272 | 272 | 272 |

Source: Elaborated by the authors.

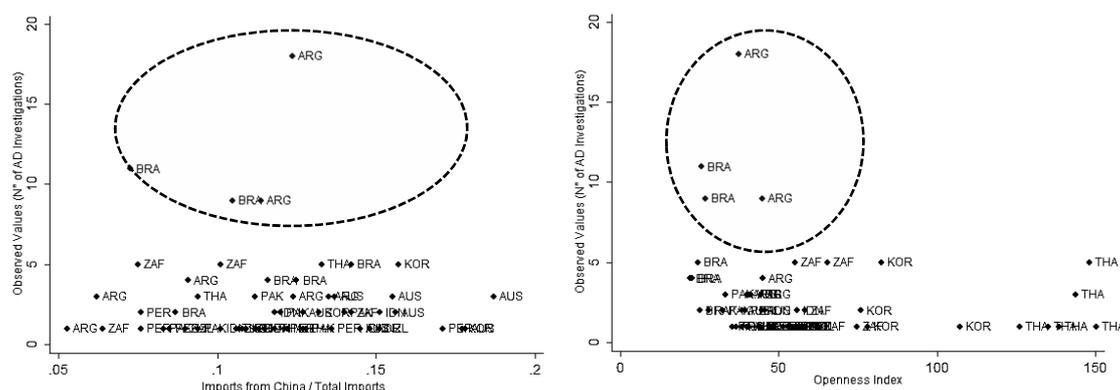
The graphical representation of the Fitted Values against each of the control variables show that countries that recognized China as MES reduced the number of antidumping investigations, as can be observed in Figure 7 showing the fitted values against each of the control variables.

Figure 7: Fitted Values (N° of AD investigations) for countries that recognized China's MES



The observed values for the countries that have recognized China as a Market Economy show that they have remained below 5 annual investigations, with the exception of Argentina and Brazil during two years each. Such behavior is discussed in the next section.

Figure 8: Observed antidumping investigations for countries that recognize China's MES



In order to proceed to interpreting the coefficients of the independent variables it is used a percentage change in the expected count. The percent change coefficients for MES Recognition, the Share of imports from China to total imports, and the Openness Index can be read as:

1. Being a country that recognized China's MES decreases the expected number of antidumping investigations initiated per year by 57.8 percent, holding all other variables constant. Excluding Argentina and Brazil in the analysis, the percent is 78.5 percent.
2. For a standard deviation increase in the relative weight of imports from China over world imports, a country's number of antidumping initiated against Chinese products increases by 51 percent, holding all other variables constant.
3. For a standard deviation increase in the Openness Index, a country's number of antidumping investigations initiated against Chinese products decreases by 38.4 percent, holding all other variables constant.

Table 9 summarizes the effect found on the independent variables over the dependent variable, contrasted with the expected effect predicted by the hypotheses.

Table 9. Comparison of the observed effects and the expected effects

| Variable | Observed effect | Expected effect |
|--|-----------------|-----------------|
| Recognition of Chinese Market Economy Status | Negative (-) | Negative (-) |
| Share of imports from China to total imports $(t-1)$ | Positive (+) | Positive (+) |
| Openness Index | Negative (-) | Negative (-) |

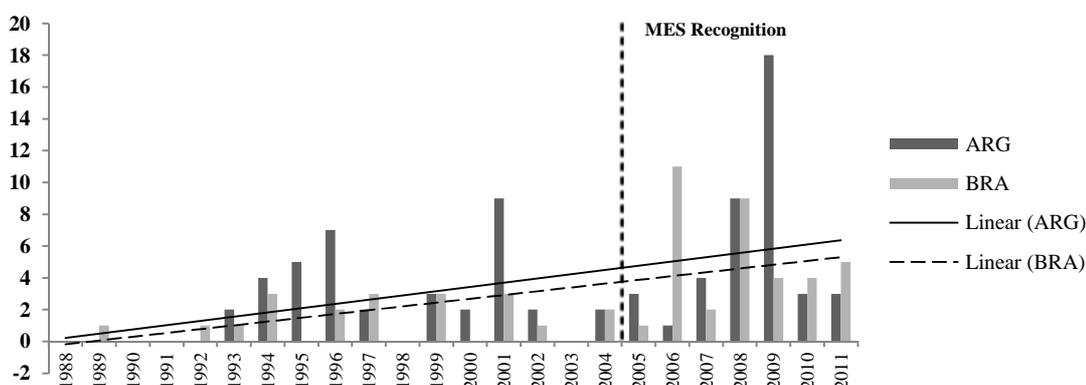
Source: Elaborated by the authors

5. Case studies: Argentina and Brazil

During Hu Jintao's visit to South America in 2004, Argentina and China signed a Memorandum of Understanding –*Memorando de entendimiento entre la República Argentina y la República Popular China sobre cooperación en materia de comercio e inversiones*— that recognized China as a Market Economy in its first article. Brazil did the same in a very similar Memorandum –*Memorando de entendimiento entre a República Federativa do Brasil e a República Popular da China sobre cooperação em matéria de comércio e investimento*— three days after.

Argentina and Brazil, which are among the top ten antidumping users in the world, together, have applied 88 investigations against Chinese products between 2001 and 2010. Their antidumping investigations did not decrease after signing the Memorandums of Understanding, as can be seen in Figure 10.

Figure 10. Number of Antidumping investigations initiated per year against Chinese products



Source: Elaborated by the authors with data from the Global Antidumping Database

Deepening discussions into these two cases exceeds this paper objective, however speculative reasons can be thought. A first possible reason for this non-compliance is related to the role played by their National Congresses. Brazil never actually declared China to be a Market economy in its domestic law (as it did with Ukraine in 2007 and a number of Central and Eastern European and Baltic countries in 2008 (IBA 2010, p. 26)) and that the same situation arises in Argentina (where

the National Congress never ratified this agreement and in antidumping proceedings China is still treated as an NME for domestic law).

A second possible reason is related to the role played by powerful interest groups. Domestic industrial groups, Federation of Industries of São Paulo (FIESP) in Brazil, and the Argentine Industrial Union (UIA) in Argentina, strongly opposed to the recognition of the Chinese MES because of the fear of an “invasion” of Chinese products. Domestic actors can sometimes limit states capacity. Theoretically, the entanglement of internal factors and international factors is well established by the theory of James Rosenau (1997) and developed previously by Robert Putnam's theory (1988). How do internal factors influence the decision of foreign policy and vice versa, and how is the link between national and international affairs are questions that were answered using the concept of intermestic processes.

Furthermore, in observing the antidumping measures by industry they correspond with some of the most vulnerable sectors in each of the countries, in terms of their Revealed Comparative Advantages. Between 2000 and 2011, Brazil initiated 16 out of 35 antidumping investigations on the manufacturing sector. Argentina 27 out of 51 antidumping investigations on the IT sector and in the manufacturing sector⁴.

It is possible that the key to understanding the non-compliance of the Memorandums is related to the local industry fear of a perceived “invasion” of Chinese products. Numerous papers consider China either a huge opportunity or a scary threat for Latin American countries, but most of them assume that China is both a huge opportunity and a big threat (Freitas Barbosa 2011; Leon-Manriquez 2006; Blázquez-Lidoy et al. 2006, and Mesquita Moreira 2006). This is the case for Argentina and Brazil, which benefit from exporting to the huge Chinese market, but feel threatened by the imports that come from it.

A deep comparative analysis needs to be done on these two particular cases and they will be the matter of future research, focusing on empirical studies of the speculative arguments here provided, comparing them with countries that have reduced their antidumping investigations after recognizing the MES.

6. Conclusion

The aim of this paper was to answer the following question: Can the Market Economy Status (MES) Recognition be measured in its compliance? The *proxy* used for that compliance was the number of antidumping investigations initiated per country. The expectation was that, due to a

⁴ Based on available data from the Global Antidumping Database.

more transparent method for calculating normal values, countries recognizing Chinese MES would initiate fewer antidumping investigations than countries that still treating China as a NME. This would explain why Chinese Government has been campaigning vigorously since 2001 to gain MES among its economic partners.

This paper showed that, 14 out of 16 countries in the sample that have recognized Chinese MES have reduced their antidumping investigations thereafter. Being a country that recognized China's MES decreases the expected number of antidumping investigations initiated per year by 57.8 percent, holding all other variables constant. Excluding Argentina and Brazil in the analysis, the percent is 78.5 percent. The model controlled for the relevance that China has in each country's imports and for the economic openness of each country.

The implications of China's entry to the WTO have been widely studied, (see for example Yinqing and Gang 2000; Yanfen 2000; Rong 2001; Fung et al. [Eds.] 2006). However, the effect of the MES recognition has been put aside by the academic community. The policy implications of this paper are relevant and timing for three main reasons.

Firstly, China has already emerged as the largest exporting nation in the world since 2009 and it is expected to surpass the USA as the largest importer by 2014, which will turn it into the single most important global trading actor.

Secondly, China is the largest target of antidumping investigations in the world. The fact that China is the largest exporter is highly correlated with this fact. However, in our model we have controlled for each country's share of imports from China to total imports, and still found a positive bias to initiate antidumping investigations against Chinese products. We demonstrate that there is a differentiated treatment between those countries that treat China as a NME and those who does not. This finding suggests that China's NME Status is highly correlated to larger antidumping investigations. Then, as the deadline of the Protocol of Accession to WTO for recognizing the Chinese Market Status is December 2016, since 2017 we expect to perceive a gradual decrease in the antidumping investigations against Chinese products.

Thirdly, Argentina and Brazil cases demonstrated that there can be noncompliance of the MES even after 2016, and the Chinese government seems to be aware of this situation. The Chinese government has repeatedly expressed its concern in several MOFCOM Foreign Market Access Reports⁵. For example, in its 2010 version it expressed that

“Argentina officially recognized China's status of market economy, announcing the end of discriminatory measures against Chinese import. However, Argentina fails to live up to its announcement in its practice by continuing to use the surrogate price of a third country in

⁵ To be find at <http://english.mofcom.gov.cn>

determining values, which greatly frustrated Chinese exporters.”(MOFCOM 2010a)

Furthermore,

“Brazil still treats China as a non-market economy according to Decree No. 1602 issued in 1995, and uses the export price of a third country as the basis to determine the normal price of Chinese products. Brazil has not amended its relevant laws and regulations regarding China’s MES, neither has Brazil rectified its mistakes in imposing anti-dumping measures against China, all of which has led to material injury to the legitimate interests of Chinese exporters.” (MOFCOM2010b).

This is the first paper that analyzes any policy implication of the MES recognition within WTO. Future works will deepen in the cases of those countries that have not complied with the Memorandums of MES recognition to explore on the role of domestic actors, such as industrial lobbies. Furthermore, the econometric model should be improved on future papers, including the temporal dimension to work with panel models, and adding more countries to the sample. Due to missing data this paper offers a first approach to the matter. This paper sets an agenda to closely follow the antidumping investigations initiated by countries that have recognized China’s MES, and interesting results will be derived after 2016 when we expect to measure the effect of the deadline of the Protocol of Accession in further research papers.

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China's Quest for Energy through FDI: New Empirical Evidence

Abstract: China's current economic development depends heavily on its access to energetic resources, and it is increasingly shaping Chinese Outward Foreign Direct Investment (OFDI) in a quest for gaining access to resources that are located abroad. The aim of this paper is to answer the two following questions: How much did the Chinese global quest for energy drive its OFDI between 2005 and 2012? Has the quest for energy been sensitive to the geographical location of the resources? Data on Chinese OFDI was retrieved from the China Global Investment Tracker, and we used diverse Host-Countries determinants of OFDI tested before in the literature and measured the impact of Host-Country energy production in the allocation of investments. Using OLS and a Spatial Lagged Model we demonstrate that energetic resources were the main driver of Chinese OFDI in 92 host countries during the studied period, and that there was no sensitivity to the geographical location of the resources.

Keywords: Energy, China, OFDI, energetic diplomacy.

JEL Codes: F21, O13, P28, Q48.

Number of words: 7373

A Procura por Energia da China através da IDE: Novas Evidências Empíricas

Resumo: O atual desenvolvimento econômico da China depende muito de seu acesso a recursos energéticos, o que cada vez mais influencia mudanças nos Investimento Direto Estrangeiro (IDE) chinês com a finalidade de possibilitar o acesso a recursos que estão localizados no exterior. O objetivo deste trabalho é responder às seguintes perguntas: Em que medida a procura por recursos energéticos afetou os IDE entre 2005 e 2012? Essa procura foi sensível à locação geográfica dos recursos? Os dados sobre IDE chineses foram obtidos do China Global Investment Tracker, e utilizaram-se determinantes domésticos de IDE, testados empiricamente na literatura existente, para medir o impacto da produção de energia do país anfitrião na alocação de investimentos. Ao aplicar MCO e um modelo com *lag* espacial em uma amostra de 92 países demonstrou-se que os recursos energéticos do país anfitrião foram o principal motor da IDE chinesa, e que não houve sensibilidade geográfica aos recursos.

Códigos JEL: F21, O13, P28, Q48.

Palavras-chave: Energia, China, Investimento Direto Estrangeiro, diplomacia energética.

Número de palavras: 7373

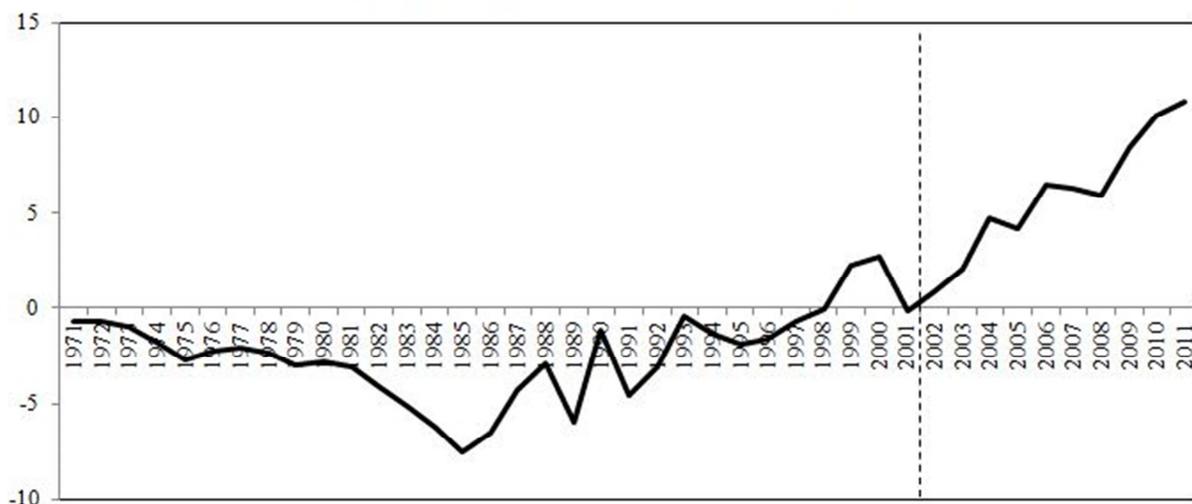
Introduction

With more than 1,34 billion people and an expanding economy, China's current economic development depends heavily on its accession to energetic resources which are located abroad. Even though this is a central issue for Chinese economic development, the literature on its international implications, as well as its domestic challenges, is scarce (Hengyun Ma Les Oxley, 2012).

China's quest for energetic resources is said to be shaping its foreign policy (Zweig & Jinhai, 2005; Shaofeng, 2011) and the way it approaches foreign markets (Crompton & Wu, 2005; Leung, 2011). By mid-2013 it had overtaken the United States as the world's top importer of crude oil (Hornby, 2013).

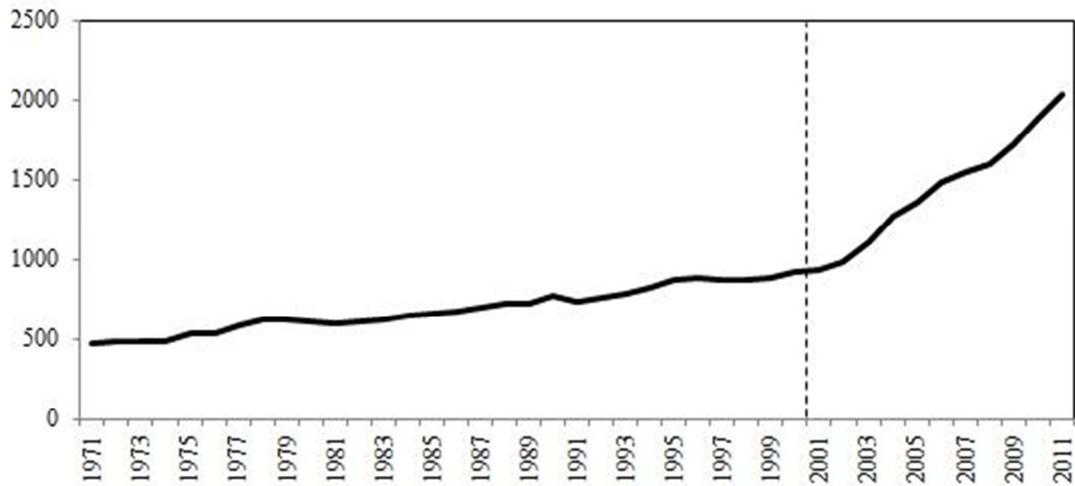
It is possible to identify three trends in the evolution of China's energy-hunger by observing empirical data that explains this phenomenon: Since 2001 China has ceased to be a net exporter of energetic resources to become a net importer. We can see this trend in Figure 1, where net energy imports are estimated as energy use less production, both measured in oil equivalents.

Figure 1: Energy imports, net (% of energy use)



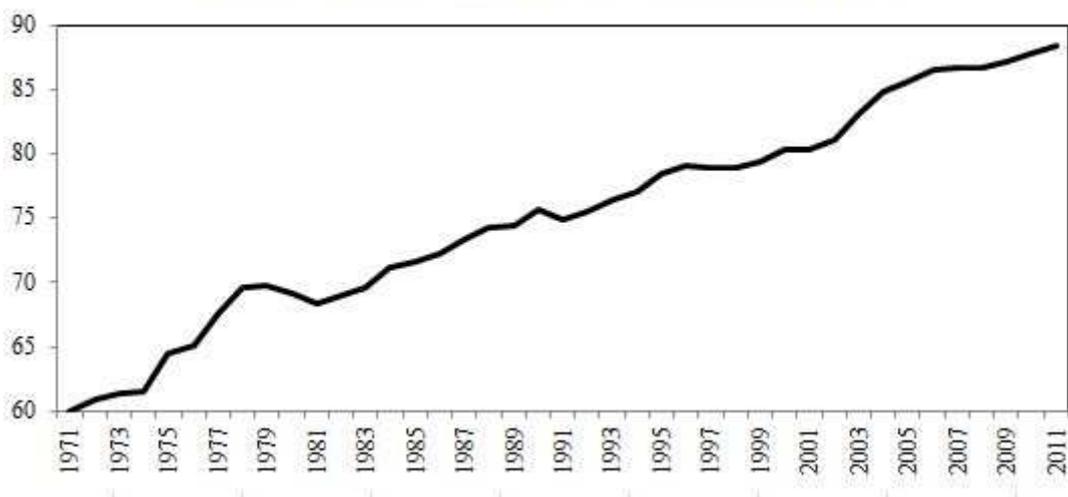
Since 2001 the consumption of energetic resources per capita in China has grown at a higher pace than the previous decades. While the consumption per capita grew at a rate of 3,25% between 1971 and 2000 it grew at a rate of 11,75% between 2001 and 2011, as can be seen in Figure 2.

Figure 2: Energy use (kg of oil equivalent per capita)



Finally, China's dependence on fossil fuels grew from a 60% in 1971 to an 88% in 2011, intensifying the dependence of a one source of energy, and as well as contributing heavily to global CO₂ global emissions (Figure 3). Fossil fuel comprises coal, oil, petroleum, and natural gas products, however, due to environmental reasons and increasing extraction cost, the decline in the use of coal will lead in the coming years to a higher dependence in oil and gas (Fisher-Vanden et al. 2004; Rui, 2005).

Figure 3: Fossil fuel energy consumption (% of total)



These three trends might be strongly influencing the Chinese Outward Foreign Direct Investments (OFDI), since China is no longer a mere recipient of Foreign Direct Investment (FDI) (see Zheng et al., 2004, Buckley & Meng, 2005; Fu, 2008; Boermans et al. 2011), but has become in

recent years an active investor in the world (Buckley et al, 2007). Among others, investing abroad is a way of gaining access to foreign markets natural resources, as considered resource-seeking investments by Behrman (1972) and years later by Dunning (1998).

Considering the strategy, in 2013 three of the ten largest companies in the world were Chinese (Sinopec Group, China National Petroleum Corporation –CNPC- and State Grid). In the same year the Forbes Global 500 included 73 Chinese companies. That is nearly 15% of the largest 500. The increasing presence of large Chinese energy corporations in the world deductively make us to think that these energy-hungry large companies have driven recent Chinese OFDI in a quest for gaining access to resources both in the developed and the developing world.

Considering the arguments above, using publicly available data on Chinese investments we test if the Chinese global quest for energy has been strong enough to be the main driver of its OFDI since 2005, from which data is available. Furthermore, assuming that China has tried to diversify as much as possible the energy sources (Jakobson & Daojiong, 2006), we are assuming that the Chinese global quest for energy has not been sensitive to the geographical location of the resources (Bloningen, 2005; Rui & Yip, 2008; Anyanwu, 2012).

The structure of the paper is as follows: First we review the recent literature on Chinese energetic investments abroad and define the hypotheses of the paper. Second, we proceed with the data analysis and the model definition, where we analyze a sample of 92 countries receivers of Chinese OFDI, from 2005 to 2012. Third, we present the results of our tests and finally we conclude discussing policy implications derived from the findings of the study.

Defining the Hypotheses

There are two central concepts for explaining the International Political Economy of the Chinese quest for energetic resources globally. One of them is the concept of *energetic security*, and the other one is the concept of *energy diplomacy*.

Authors refer to the concept of energetic security to analyze the international quest for resources of China as being a national security issue that involves the notion of national power and the pursue of national interest (Nolan et al. 2004; Downs, 2004; Lee, 2005; Daojiong, 2006; Jakobson & Daojiong, 2006; Yi-Chong, 2006; Ogle, 2010). Oil, more than any other commodity, is intimately intertwined with nationalism and national power, and is subject to political and military struggles for its control (Yergin, 1988).

One example that further demonstrates the extent of state involvement into the energetic sector is the national political debate started in the USA after China National Offshore Oil Corporation (CNOOC) bid to acquire the American company Unocal in 2005. The company withdrew its \$18.4 billion bid for Unocal due to a political backlash that highlighted the United States' growing apprehension about the economic rise of China. Another example that further enhances security concerns is the geopolitical dependence on the Strait of Malacca, where around 75% of Chinese total oil consumption travels through, is another example that further enhances security concerns (Francisco & Baechler, 2013).

To avoid the dependence on oil importing (see Figure 1), OFDI looks for controlling the resources abroad directly by partnering with local companies, or acquiring the rights to exploit the resources. China had to work out a national energy strategy to encourage the National Oil Companies (NOCs) to cooperate with host countries and other International Oil Companies (IOCs) (Xu, 2007).

CNPC, Sinopec and CNOOC –the three largest NOCs- share a common set of originators, the former Ministry of Petroleum Industry and the former Ministry of Chemical Industry. In the early 1980s, the initial years of China's economic system reforms, the Chinese government decided to convert the productive assets of these and other ministries into state-owned enterprises (SOEs) (Lewis, 2007; Guo, 2007).

Chinese oil companies began investing abroad acquiring concession rights in foreign oil fields in 1993, when a subsidiary of China National Petroleum Corporation (CNPC) bought the

Talara Block in Peru for \$25m (Daojiong, 2006). Since then, Chinese oil companies have entered into an array of overseas oil investments. In late 1999 it was defined a national strategy, named Going Abroad, to pave the way for Chinese oil majors to expand their businesses abroad. It consisted on using investment incentives for many Chinese companies to go global, including the gradual liberalization and reform of regulatory systems, of financial regimes including rules of the World Trade Organization (WTO) and other broadly applied international standards (Xu, 2007).

In recent years, the four major Chinese NOCs – CNPC, Sinopec, CNOOC, and Sinochem – have been learning a great deal about doing business globally, and have emerged as significant players in global mergers and acquisitions in upstream oil and natural gas (Jiang & Sinton, 2011). Some examples of their big acquisitions can be seen at Appendix A, which offers a full list of these four NOCs investments abroad since 2005.

As shown in Table 1, since 2005 these companies have grown considerably and currently two of them are among the top 10 largest companies in the world. Sinopec had in 2013 annual revenue of 428 billion US\$ and reported profits for 8.2 billion US\$. CNPC, the largest of all four, counted with 1.6 million employees comparable to the population of Trinidad and Tobago in 2011 (Trinidad & Tobago Census Result, 2011), country where CNOOC and Sinopec invested US\$ 320 million in 2009.

Table 1: China´s NOCs in selected figures

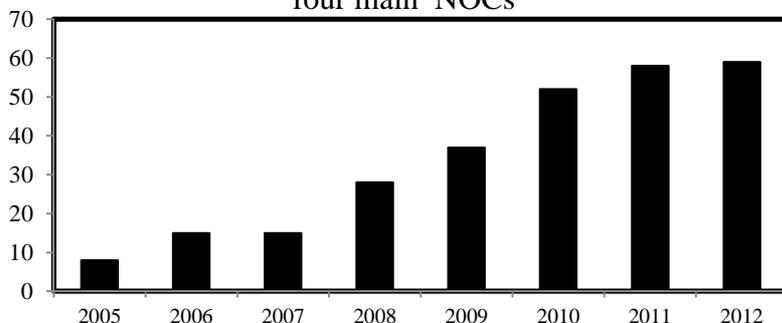
| | Global Ranking | Ranking move since 2005 | Revenue 2013 (US\$ billions) | Revenue % change from 2011 | Number of employees |
|----------|----------------|-------------------------|------------------------------|----------------------------|---------------------|
| Sinopec | 4 | +27 | 428 | 14,1 | 1.015.000 |
| CNPC | 5 | +41 | 408 | 16 | 1.660.000 |
| CNOOC | 93 | was not in the list | 83 | 10,5 | 102.500 |
| Sinochem | 119 | +168 | 71,8 | 1,2 | 142.000 |

Source: 2013 and 2005 Fortune Global 500 Ranking.

Considering all the above discussion, the first hypothesis of this paper is that Chinese global quest for energy has driven its OFDI between 2005 and 2012 (Hypothesis 1). This hypothesis is

further supported by Figure 4, which shows the growth in the number of yearly energy investments abroad by Chinese NOCs.

Figure 4: Number of annual investments made by the four main NOCs



Source: China Global Investment Tracker

Along with the strategies of energetic security, on the other hand, the concept of energetic diplomacy (Myers Jaffe & Lewis, 2002; Zweig & Jinhai, 2005; Taylor, 2007), refers to the policy of developing close ties with energy producers in order to diversify the investments geographically putting the ‘eggs in several baskets’. This translates into the fact that Chinese NOCs have looked for opportunities all around the globe.

Focusing on the Middle East, China’s first initiative in the 90s’ was to increase imports from the largest oil producing countries. Back in 1995 Southeast Asia and the Middle East were the two dominant sources of oil imports for China. By 2000, however, the Middle East’s share had increased to a whopping 54%, whereas the share of Southeast Asia fell from a 42% to a 15%. As Saudi-US ties became strained in the wake of 9/11, Saudi oil shipments to the USA declined in 2004. In contrast, Saudi oil exports to China increased and China-Saudi energy cooperation deepened (Lai, 2007).

However, because of China’s concern about political instability as well as USA dominance in the Middle East after 9/11 it set its eyes on Africa especially Nigeria, Tanzania, Ethiopia and Ghana (Brautigam, 2009; Anyanwu, 2012). The USA and the European Union have distanced themselves from these African states because of concerns over human rights violations and violence there. In

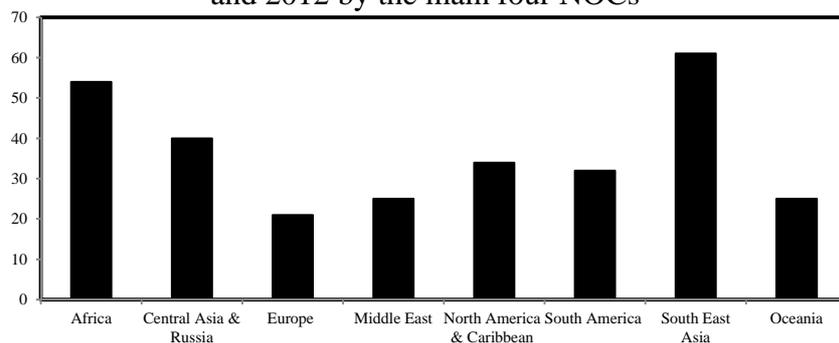
contrast, China's ties with the region are free of ideological or security obstacles, as well as of historical hostilities between the West and these countries (Lai, 2007; Biggeri & Sanfilippo, 2009).

In Central Asia, an oil pipeline linking Kazakhstan and China was thought to have geopolitical ramifications, since it binds the interests of the two countries in seeking autonomy from Russian dominance of the regional oil supply (Daojiong, 2006). However, while European demand for Russian oil decreased China increasingly became Russia's priority market. In 2013 Russian state-owned oil major Rosneft tripled supplies to China to 1 million barrels a day, and signed a deal to supply China with US\$ 270 billion worth of oil during the next 25 years (Weaver & Buckley, 2013).

Recently China has focused on Latin American countries. Gallagher et al. (2012) estimated that since 2005, China provided loan commitments upwards of \$75 billion to Latin American countries, being two thirds "loans-for-oil". A loan-for-oil generally combines a loan agreement and an oil-sale agreement that involves two countries' state-owned banks and oil companies. Venezuela has negotiated four such loans, totaling \$32 billion, since 2008. Brazil signed one for \$10 billion in commitments in 2009. Ecuador signed a \$1 billion loan-for-oil in 2009 and a second in 2010. In July of 2011, it added a third for \$2 billion (pp. 28-33).

Taken into account these facts, the second hypothesis of the paper is that the Chinese global quest for energy has not been sensitive to the geographical location of those resources (Hypothesis 2). By observing Figure 5, we perceive that Chinese main four NOCs have invested all around the world since 2005, supporting the idea of diversifying the investments geographically as much as possible. This can be further visualized in Appendix A.

Figure 5: Identified projects per region between 2005 and 2012 by the main four NOCs



Source: China Global Investment Tracker

Data and Methods

Data on Chinese OFDI was retrieved from the China Global Investment Tracker, organized by the Heritage Foundation (Scissors, 2011). The sample period we study (2005 to 2012) was determined by the availability of data from this source. This is the only publicly available Chinese OFDI base, which has the advantage –compared to other databases on Chinese investments- that its information can be replicated by other scholars.

Another advantage of this database is that it includes information on transactions of failed and successful Chinese investments, which may overstate the amount of investments. In this paper, failed projects have not been taken into account. Furthermore, as recently outlined by Liao & Tsui (2012), the China Global Investment Tracker excludes tax heavens such as Hong Kong, the British Virgin Islands, and the Cayman Islands, so it only considers final destinations rather than transit points of OFDI. This fact has great impact on the results, as more than seventy percent of China's outward direct investment goes to tax heavens. On the other hand, a caveat of the database is that it only registers transactions valued at more than \$100 million, so we miss small projects.

To test our first hypothesis we consider the nine sectors of investments in the database, namely Agriculture, Chemicals, Energy, Finance, Metals, Real State, Technology, Transport, and Other. We use diverse Host-Countries determinants of OFDI tested before in the literature of home determinants of Chinese OFDI (Liu et al. 2005; Buckley et al. 2007; Morck et al. 2008; Cui & Jiang,

2010; Luo et al. 2010; Ramasamy et al. 2012; De Beule & Duanmu, 2012) and measure the impact of Host-Country energy production in the allocation of investments.

To test our first hypothesis we use cross-country Ordinary Least Squares (OLS), and the sample is comprised of 92 countries. We test two dependent variables: The first is the sum of Chinese OFDI received per country between 2005 and 2012. The second variable is the number of investment projects in each country between 2005 and 2012. The main independent variable measures the host country's energetic production on thousands kilotonnes of oil or equivalents for the year 2004, and it was constructed using data from World Bank Indicators.

Other independent variables consider host-countries determinants of Chinese OFDI that have been tested by other authors¹. Liu et al. (2005) found that the level of economic development, proxied by GDP per capita plus refinements, is still the main factor explaining China's rate of OFDI. They also found OFDI to be positively influenced by the value of local investments in human capital, proxied by education indicators.

Buckley et al. (2007) found Chinese OFDI to be associated with host natural resources endowments, proxied by data on host country's exports of ores and minerals. Other indicators such as land under cereal production, iron and steel production, and forest area, can also be used to proxy for natural resources. The authors also found Chinese OFDI to be associated with high levels of political risk in, and cultural proximity to, host countries throughout, and with host market size and geographic proximity. In the same direction, Ramasamy et al. (2012) found that Chinese State-controlled firms are attracted to countries with large sources of natural resources and risky political environments.

De Beule and Duanmu (2012) analyze how country-specific determinants affect Chinese and Indian acquisitions and test eleven home-country specific advantages: Market Size, Market Wealth (GDP per capita), Market Openness, Resources (percentage of ores and metals exports to total

¹ The indicators used to test the model for our first hypothesis are detailed in Appendix B.

merchandise exports by country), Number of Patents, Political Stability (Rule of Law, Control of Corruption), Regulatory Quality, and Geographical Distance. While better rule of law, regulatory quality and control of corruption are found to be important only for Indian firms, political stability proves to be a negative estimator for China.

Finally, Anyanwu (2012) studies Chinese OFDI in Africa and finds that market size and openness to trade are positively related with levels of OFDI received by each country, natural resource endowment and exploitation (such as oil) attracts huge OFDI, and higher financial development has negative effect on OFDI, reflecting that China is investing in countries with poor and untrusting financial markets.

To test our second hypothesis we only use investments in the energetic sector on the China Global Investment Tracker. We used an interactive term ($\text{energy production}_i \times \text{region}_i$) to test for the existence of strategic regions in Chinese investments. Such dummy variables (continents) will essentially fit separate intercepts for different geographical regions, thereby allowing taking into account fixed mean differences in the dependent variable y across discrete regions.

This is by far the most common approach for addressing regional heterogeneity in applied work, and social science is replete with models in which region categories are included as dummy variables (Ward & Gleditsch, 2008). However, the regional dummy variable specification may not generally be an adequate alternative to the spatially lagged y model and entails assumptions that can be overly restrictive.

For this reason we also use Moran's I to test for the existence of clusters of Chinese investment around the globe. There are a number of theoretical reasons why FDI into a host country may depend on the FDI in proximate countries, such as when a parent country invests in a particular host country with the intention of serving third markets with exports of final goods from the affiliate in the host country (Bloningen et al. 2007). Somewhat analogous to a lagged dependent variable in

time series analysis, the estimated ‘‘spatial lag’’ coefficient characterizes the contemporaneous correlation between one country’s FDI and other geographically-proximate countries’ FDIs.

Our weights matrix was built considering the dyadic distance between country’s capitals (a 92×92 matrix in our case). Through this matrix we can detect if a country’s sum of Chinese investments co-varies with the sum of Chinese investments received among its geographical neighbors, contributing to test our hypothesis that Chinese global quest for energy has not been sensitive to the geographical location of those resources.

There are several studies on spatial determinants of FDI directed to China (Chen, 1996; Wei et al. 1999; Coughlin & Segev, 2000) but we did not find studies on geographical determinants of Chinese OFDI, except for Anyanwu (2012). This author studied regional determinants of Chinese OFDI in Africa and found that East and Southern African sub-regions appear positively disposed to obtain higher levels of inward FDI.

Empirical Results

Table 2 presents OLS results for two different specifications of Chinese OFDI, and the impact of energetic resources, along with a set of political and economic control variables dictated by the theoretical framework outlined above². Both models include the same set of independent variables, and both show high R².

Table 2: Regression Results

| | <i>Sum of FDI</i> | <i>Number of projects</i> |
|-----------------------|-----------------------|-------------------------------|
| Cereal yield | -0.839 (-1.94) | -0.000579 (-1.46) |
| Land under production | 0.190* (2.09) | 0.000135 (1.62) |
| Forest area | 0.778 (0.80) | 0.000380 (0.43) |
| Energy production | 23.38*** | 0.0280*** |

² Appendix C offers a correlation matrix.

| | | |
|--|----------------------|-------------------------|
| | (4.28) | (5.60) |
| Iron and steel production | -0.345*** (-4.95) | -0.000291*** (-4.57) |
| Chinese Imports from country i | 213.0*** (3.82) | 0.204*** (4.00) |
| Electricity and telephony infrastructure | 677.3 (0.55) | 0.140 (0.13) |
| Trustworthiness and confidence | 1621.1 (1.24) | 1.750 (1.46) |
| Macroeconomic environment | -2215.6** (-2.69) | -2.271** (-3.01) |
| Roads, paved (%) | -44.50 (-1.49) | -0.0424 (-1.55) |
| Ease of doing business rank | -6.675 (-0.24) | -0.00572 (-0.22) |
| Domestic market size | 482.7 (0.48) | 0.444 (0.49) |
| GDP per capita | 0.164* (2.56) | 0.0000836 (1.43) |
| Inflation, consumer prices | -0.385 (-0.51) | -0.000186 (-0.27) |
| Health | 1109.0 (0.79) | 1.919 (1.50) |
| Public Institutions | -715.0 (-0.48) | -0.475 (-0.35) |
| Total tax rate | -0.988 (-0.03) | -0.0116 (-0.38) |
| Time to prepare and pay taxes | 5.986* (2.17) | 0.00582* (2.30) |
| Time required to enforce a contract | -1.159 (-0.45) | -0.0000317 (-0.01) |
| Distance in Km between capitals | 0.167 (0.79) | 0.0000357 (0.18) |
| Constant | -713.5 (-0.07) | -2.077 (-0.21) |
| <hr/> | | |
| N | 92 | 92 |
| R ² | 0.699 | 0.738 |

t statistics in parentheses - * p<0.05, **p<0.01, *** p<0.001

In both specifications, the energy production of the host country showed statistical significance and big coefficients. A unit increase in the independent variable (an increase in the host country's energetic production of one thousand kilotonnes of oil or equivalents) is predicted to increase Chinese OFDI by 23, 4 U\$S million dollars. It also increases the likelihood of increasing in one unit the number of projects by 3%. It supposes a big impact on the dependent variables, considering that the average energetic production in our sample is of 98 thousand kilotonnes, with a Standard Deviation of 228. This finding reveals that the host country energetic production was a main determinant of Chinese OFDI during our period of study.

Chinese Imports from the host country showed statistical significance, which suggests that investments are being directed to countries with which China has strong commercial bonds and economic interest in, as Anyanwu (2012) found on his study of Chinese investments in Africa. Surprisingly, Iron and steel production is negatively related to Chinese OFDI, suggesting that having a strong industrial production is not a determinant of Chinese investments. Not surprisingly, on the other hand, investments seems to be directed to countries with weak macroeconomic environments, as found by Buckey et al. (2007) and Ramasamy et al. (2012).

Figure 6.a presents the predicted investments in the energetic sector for each country following our baseline model in Table 2, and Figure 6.b present the predicted investments after considering the interactive term ($\text{energy production}_i \times \text{region}_i$) to test for the existence of strategic regions in Chinese investments during the studied period of time. In the regression we included seven macro-regions (Africa, Central Asia & Russia, Europe, Middle East, South America, South East Asia, and Oceania), and only three of them showed statistical significance. Oceania and Middle East had positive effect, and Central Asia & Russia had a negative effect.

Figure 6.a: Predicted investments in the energetic sector

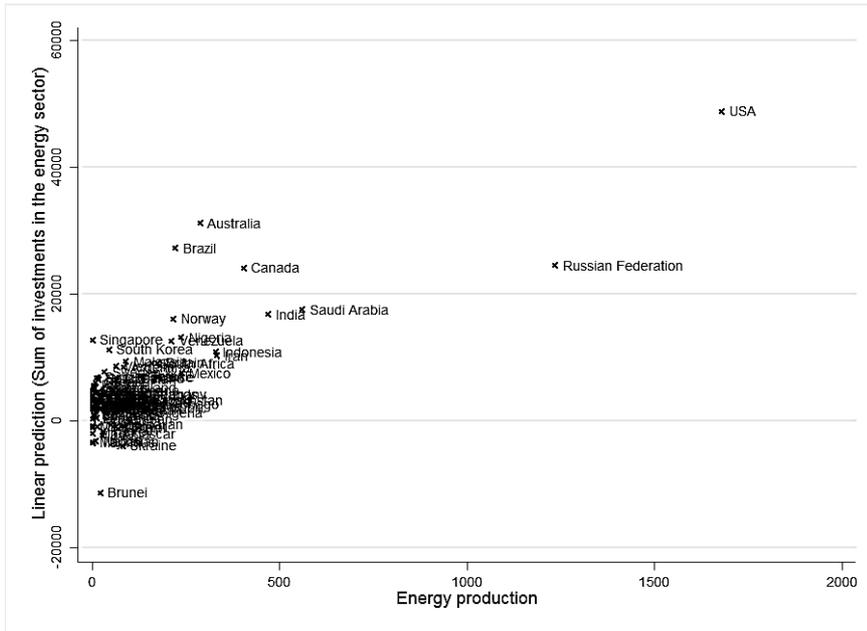
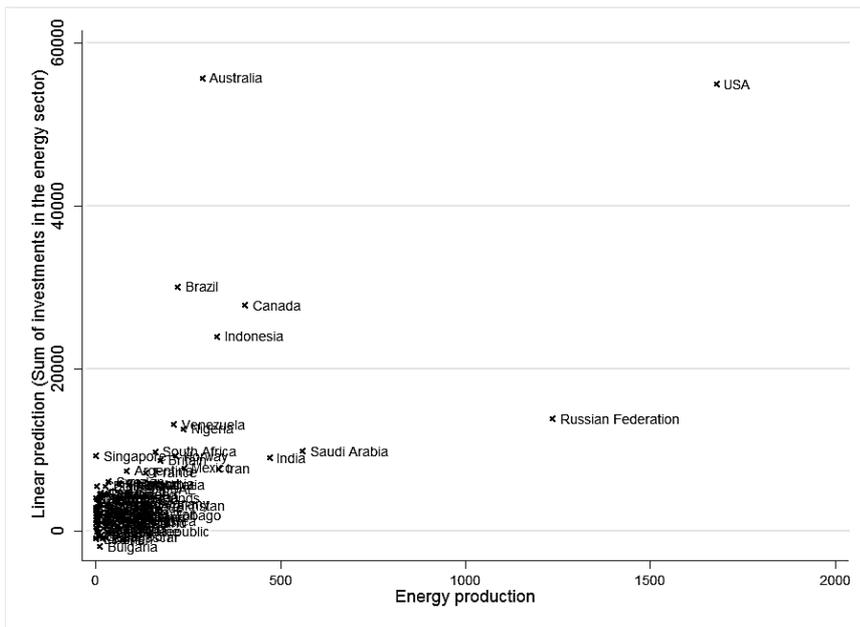


Figure 6.b: Predicted investments after considering the interactive term



Two interesting observations can be made from the results in both figures. The first observation is that a majority of countries are located in the lower left corner of the plot, and a few countries (Australia, Brazil, Canada, Indonesia, Russia, Saudi Arabia, and USA) stand over the rest both in the energy production, and the predicted sum of investments. The second observation is that after controlling for our interactive term, the variation was not uniform across countries. Firstly, for

Indonesia and Australia investments increased significantly suggesting that Chinese MNEs in the energy sector give priority to its immediate area of influence. Some authors consider there is a vested interest in promoting a stable security environment in East Asia that enables China to maintain stable economic growth and technological modernization without major interruptions or foreign impediments (Mayer & Wübbecke, 2013). Secondly, Canada's and USA's predicted amounts of investments increased slightly, suggesting that these two countries are of strategic importance to China in energy. Thirdly, for Saudi Arabia and Russia the interactive term lowered predicted investments.

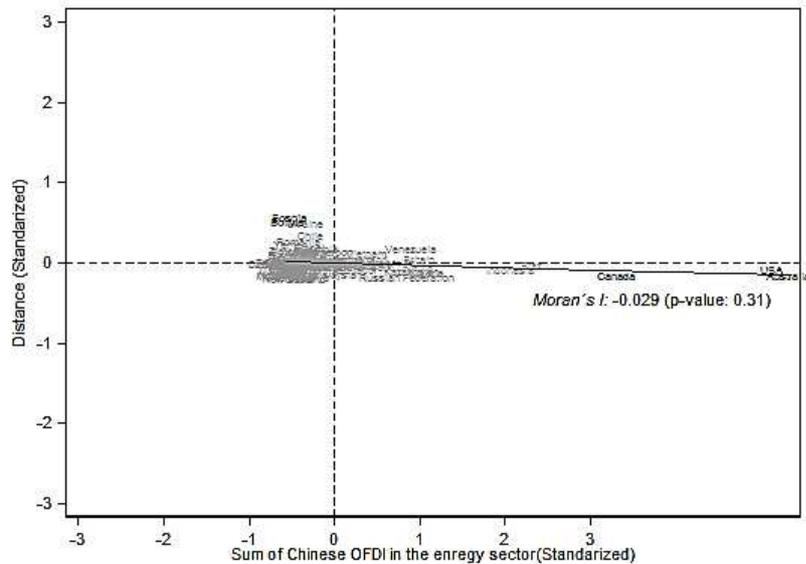
Finally, Figure 7 provides a stylized plot illustrating the Moran I statistic. The spatial lag is shown on the vertical axis, while the horizontal axis portrays the value of each observation, standardized to have means of 0 and variances of 1³.

Moran's I compares the relationship between the deviations from the mean across all neighbors i adjusted for the variation in y and the number of neighbors for each observation. Higher values of a Moran's I indicate stronger positive geographical clustering, that is, that values for neighboring units are similar to one another. We found an almost null effect, which had also no statistical significance.

These results give us immense information about the geographical distribution of Chinese OFDI on its quest for energy. Based on these evidences we can affirm that there are no regional clusters, and only investments in Oceania and Middle East regions were above the mean when controlling for its energetic production.

Figure 7: Spatial Autocorrelation

³ Similar results were found when using the number of projects as dependent variable.



Policy Implications

The aim of this paper is to provide new evidence on the Chinese global quest for energy through recent available data on Chinese OFDI. The expectation was that Chinese global quest for energy drove OFDI between 2005 and 2012, and that investments have not been sensitive to the geographical location of those resources. The results showed that both hypotheses are confirmed. These findings are in line with Mayer & Wübbecke (2013) who argue that Chinese energetic policy is based on pragmatism fostering integration into existing supply systems and market institutions, thus strongly relying on world markets to satisfy the growing energy demand.

This paper showed that the host country energetic production was a main determinant of Chinese OFDI. This assumption has already been shown in works studying home determinants of Chinese OFDI (see for ex. Buckey et al. 2007 and Anyanwu, 2012), however, this paper is the first to focus on the policy implications of Chinese OFDI in energetic resources considering *energetic security*, and *energy diplomacy* concepts, and to study it using the only publicly available database on Chinese investments. The policy implications of our findings are relevant and timing for three main reasons.

Firstly, China has already emerged as the world's top importer of crude oil. As urbanization within China continues into the future (Shen et al., 2005), it will be inevitably accompanied by

dramatic increases in the consumption of energy and as we have shown in our empirical model, Chinese investments will be directed to countries that can supply this increasing demand for energy.

Secondly, even though we could not find neither geographical clusters of investments, nor spatial autocorrelation among countries on energetic investments, the findings show that Australia and Indonesia are predicted to receive important energetic investments, probably because they are located in a region where China has a vested interest in promoting a stable security environment, which enables it to maintain stable economic growth and technological modernization without major interruptions or foreign impediments. Australia is predicted to receive the largest amount of money on energy projects, only after the USA.

Thirdly, investments will probably continue to be directed to countries that do not have stable economic environments. Thus, we expect the largest amount of energetic investments in Africa and South America in the following years. In the use of energetic diplomacy, it is likely that “loans-for-oil” will continue to grow as a way of conducting business in these unstable markets.

As one of the first papers to study the relation between OFDI and energetic hunger in China, there is much more to be said on this issue. Future work should deepen on the role of the main NOCs, and the political link between these companies and the national government. Also, there is evidence that joint-ventures perform better than wholly foreign-owned firms (Greenway et al., 2012), and this fact should be taken into account. Furthermore, the econometric model should be improved on future studies, including the temporal dimension to work with panel models, and adding more countries to the sample. Due to missing data this paper offers a first approach to the matter. This paper sets an agenda to closely follow the newly phenomenon of Chinese OFDI in the energetic sector.

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Appendix A

| Year | Month | Investor | Ammount (million US\$) | Partner/ Target | Country |
|------|-----------|----------------------|------------------------------|---|-----------------------|
| 2005 | April | CNOOC | \$130 | MEG Energy | Canada |
| 2005 | May | CNPC | \$390 | SONATRACH | Algeria |
| 2005 | June | Sinopec | \$120 | Synenco | Canada |
| 2005 | August | CNPC | \$4.200 | PetroKazakhstan | Kazakhstan |
| 2005 | September | Sinopec | \$350 | Aker Kvaerner | Saudi Arabia |
| 2005 | September | CNPC and Sinopec | \$1.420 | EnCana | Ecuador |
| 2005 | December | CNPC | \$290 | Petro-Canada | Syria |
| 2006 | January | CNOOC | \$2.270 | South African Petroleum | Nigeria |
| 2006 | April | Sinopec | \$1.290 | Petrobras | Brazil |
| 2006 | May | Sinopec | \$730 | Sonangol | Angola |
| 2006 | June | Sinopec | \$3.490 | Rosneft | Russian Federation |
| 2006 | July | Sinopec | \$2.800 | North West Shelf Partners | Iran |
| 2006 | July | CNPC | \$500 | Rosneft | Russian Federation |
| 2006 | September | Sinopec | \$430 | Omimex | Colombia |
| 2007 | January | CNPC | \$200 | EnCana | Chad |
| 2007 | February | Sinopec | \$100 | Syntroleum | USA |
| 2007 | December | Sinopec | \$2.010 | National Iranian Oil | Iran |
| 2008 | February | Sinochem | \$470 | Soco | Yemen |
| 2008 | March | Sinopec | \$560 | AED | Australia |
| 2008 | April | CNOOC | \$130 | Husky Energy | Indonesia |
| 2008 | June | CNPC | \$4.990 | - | Niger |
| 2008 | July | CNOOC | \$2.490 | Awilco Offshore | Norway |
| 2008 | July | Sinochem | \$200 | GMG Global | Singapore |
| 2008 | September | Sinopec | \$1.990 | Tanganyika Oil | Syria |
| 2008 | Novermber | CNPC | \$3.020 | - | Iraq |
| 2008 | December | CNPC | \$3.290 | International Petroleum Investment | UAE |
| 2009 | January | CNPC | \$1.760 | National Iranian Oil | Iran |
| 2009 | April | Sinopec | \$350 | Kuwait Oil | Kuwait |
| 2009 | April | CNPC | \$2.600 | Central Asia Petroleum | Kazakhstan |
| 2009 | May | CNOOC and Sinopec | \$320 | Talisman Energy | Trinidad-Tobago |
| 2009 | May | CNPC | \$1.020 | Singapore Petroleum | Singapore |
| 2009 | June | CNPC | \$1.240 | - | Myanmar |
| 2009 | June | Sinopec | \$7.200 | Addax Petroleum | Switzerland |
| 2009 | August | CNPC | \$1.740 | Athabasca Oil Sands | Canada |
| 2009 | August | CNOOC | \$100 | Qatar Petroleum | Qatar |
| 2009 | August | Sinochem | \$880 | Emerald Energy | Britain |
| 2009 | September | CNPC | \$1.160 | Singapore Petroleum | Singapore |
| 2009 | September | CNPC | \$2.250 | National Iranian Oil | Iran |
| 2009 | November | CNOOC | \$100 | Statoil | USA |
| 2009 | December | CNPC | \$240 | State Oil Marketing Organization and South Oil Company | Iraq |

| | | | | | |
|------|-----------|------------------|---------|---|--------------|
| 2009 | December | CNPC | \$3.130 | | Turkmenistan |
| 2010 | March | Sinopec | \$1.700 | Kazakhstan Petrochemical | Kazakhstan |
| 2010 | March | CNPC | \$180 | INOVA Geophysical Equipment | USA |
| 2010 | March | CNOOC | \$3.100 | Bridas | Argentina |
| 2010 | March | CNPC | \$1.580 | Arrow Energy | Australia |
| 2010 | March | Sinochem | \$500 | - | Sudan |
| 2010 | April | CNOOC | \$180 | Chevron | Australia |
| 2010 | April | Sinopec | \$4.650 | ConocoPhillip | Canada |
| 2010 | April | CNOOC | \$270 | BG | Australia |
| 2010 | April | CNPC | \$900 | PDVSA | Venezuela |
| 2010 | May | CNPC | \$1.480 | Shell | Syria |
| 2010 | May | Sinochem | \$3.070 | Statoil | Brazil |
| 2010 | May | CNPC | \$150 | - | Indonesia |
| 2010 | October | Sinopec | \$7.100 | Repsol | Brazil |
| 2010 | October | CNOOC | \$2.370 | Chesapeake Energy | USA |
| 2010 | October | Sinochem | \$1.440 | Makhteshim-Agan | Israel |
| 2010 | November | CNPC | \$4.500 | Cuvenpetrol | Cuba |
| 2010 | November | CNPC and Sinopec | \$610 | - | Ecuador |
| 2010 | December | Sinochem | \$270 | DSM | Netherlands |
| 2010 | December | Sinopec | \$2.470 | Occidental Petroleum | Argentina |
| 2010 | December | Sinopec | \$680 | Chevron | Indonesia |
| 2011 | January | CNPC | \$510 | INEOS Britain | Britain |
| 2011 | January | CNPC | \$510 | INEOS France | France |
| 2011 | February | Sinopec | \$1.520 | Origin Energy-ConocoPhillips | Australia |
| 2011 | February | CNOOC | \$330 | ExxonMobil | Argentina |
| 2011 | March | CNOOC | \$1.450 | Tullow | Uganda |
| 2011 | March | Sinopec | \$3.300 | SABC | Saudi Arabia |
| 2011 | May | Sinopec | \$540 | Shell | Cameroon |
| 2011 | June | CNPC | \$170 | Maysan Oil | Iraq |
| 2011 | July | CNOOC | \$2.040 | Opti Canada | Canada |
| 2011 | September | CNPC | \$500 | Tanzania Petroleum Development | Tanzania |
| 2011 | October | Sinopec | \$2.100 | Daylight Energy | Canada |
| 2011 | October | CNPC | \$400 | Watan | Afghanistan |
| 2011 | November | Sinopec | \$4.800 | Galp Energia | Brazil |
| 2011 | December | Sinopec | \$990 | Australia Pacific Liquefied Natural Gas | Australia |
| 2011 | December | CNPC | \$150 | Varun Industries | Madagascar |
| 2011 | December | Sinopec | \$850 | Marubeni | Kazakhstan |
| 2011 | December | Sinopec | \$700 | Ghana National Gas | Ghana |
| 2012 | January | CNPC | \$270 | Bow Energy | Australia |
| 2012 | January | Sinopec | \$2.440 | Devon Energy | USA |
| 2012 | January | CNPC | \$670 | Athabasca Oil Sands | Canada |
| 2012 | February | CNPC | \$1.030 | Shell | Canada |
| 2012 | February | Sinochem | \$260 | Siat | Belgium |
| 2012 | February | Sinochem | \$980 | Total | Colombia |
| 2012 | February | Sinopec | \$850 | Ghana National Gas | Ghana |
| 2012 | June | Sinochem | \$700 | Sumber Segara Primadaya | Indonesia |

| | | | | | |
|------|-----------|----------|----------|------------------------|--------------|
| 2012 | July | Sinopec | \$1.500 | Talisman Energy | Britain |
| 2012 | September | Sinopec | \$1.020 | Summit Power | USA |
| 2012 | October | CNPC | \$1.510 | TransCanada | Canada |
| 2012 | October | Sinopec | \$850 | - | Indonesia |
| 2012 | October | Sinopec | \$170 | Mercuria | Switzerland |
| 2012 | October | CNOOC | \$1.930 | BG | Australia |
| 2012 | November | Sinopec | \$2.500 | Total | Nigeria |
| 2012 | November | Sinochem | \$400 | Saudi Basic Industries | Saudi Arabia |
| 2012 | November | Sinopec | \$1.980 | DKRW | USA |
| 2012 | December | CNPC | \$1.630 | BHP | Australia |
| 2012 | December | CNPC | \$2.180 | Encana | Canada |
| 2012 | December | CNOOC | \$15.100 | Nexen | Canada |

Source: China Global Investment Tracker

Appendix B

| Variables | Indicators | Data Sources |
|--|---|---|
| Dependent: | | |
| Amount of Chinese OFDI (Y_{1i}) | It is expressed as the amount of FDI received from Chinese MNEs by each of the 92 countries in our sample | Heritage Foundation China Global Investment Tracker |
| Number of investment projects (Y_{12}) | It is the number of projects in each of the 92 countries in the sample | Heritage Foundation China Global Investment Tracker |
| Independent: | | |
| Energy production (X_{ii}) | Energy production - Thousand kt of oil or equivalent in 2004 | World Bank Data |
| Controls: | | |
| Cereal Yield | Kg per hectare - Average 2005 -2011 | World Bank Data |
| Land under production | Land under cereal production - Thousand hectares - Average 2005 -2011 | World Bank Data |
| Forest Area | Thousand sq. Km in 2005 | World Bank Data |
| Iron and Steel Production | Thousand of tons in 2007 | World Bank Data |
| Chinese Imports from country | Chinese Imports from Country i - average 2205 - 2012 | World Bank Data |
| Electricity and telephony infrastructure | Score between 0 and 7 | World Economic Forum |
| Trustworthiness and confidence | Score between 0 and 7 | World Economic Forum |
| Macroeconomic environment | Score between 0 and 7 | World Economic Forum |
| Paved Roads | % of total roads, latest available value | World Bank Data |
| Ease of doing business rank | 1=most business-friendly regulations - Data for 2012 | World Economic Forum |
| Domestic market size | Score between 0 and 7 | World Economic Forum |
| GDP per capita | current US\$, average 2005 - 2012 | World Bank Data |
| Inflation | annual %, average 2005 - 2012 | World Bank Data |
| Health infrastructure | Score between 0 and 7 | World Economic Forum |
| Public Institutions Strenght | Score between 0 and 7 | World Economic Forum |
| Total Tax Rate | % of commercial profits, average 2005 - 2012 | World Bank Data |
| Time to prepare and pay taxes | Hours, average 2005 - 2012 | World Bank Data |
| Distance | Kms between Beijing and the country's capital | World Distance Calculator |

Source: Elaborated by the authors.

Appendix C

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|----|
| 1.Cereal yield | 1 | | | | | | | | | | | | | | | | | | | |
| 2.Land under cereal production | -0.0095 | 1 | | | | | | | | | | | | | | | | | | |
| 3.Forest area | -0.0208 | 0.4761 | 1 | | | | | | | | | | | | | | | | | |
| 4.Energy production | 0.1490 | 0.6679 | 0.6896 | 1 | | | | | | | | | | | | | | | | |
| 5.Iron and steel production | 0.2220 | 0.5340 | 0.4696 | 0.6047 | 1 | | | | | | | | | | | | | | | |
| 6.Chinese Imports from country _i | 0.2384 | 0.2503 | 0.2614 | 0.4254 | 0.7888 | 1 | | | | | | | | | | | | | | |
| 7. Electricity and telephony infrastructure | 0.5862 | -0.0274 | 0.1124 | 0.2100 | 0.3254 | 0.3731 | 1 | | | | | | | | | | | | | |
| 8.Trustworthiness and confidence | 0.2933 | 0.1000 | -0.0151 | 0.0828 | 0.1253 | 0.2350 | 0.4593 | 1 | | | | | | | | | | | | |
| 9.Macroeconomic environment | 0.1443 | -0.0537 | 0.0774 | 0.1219 | 0.0019 | 0.1299 | 0.4539 | 0.3007 | 1 | | | | | | | | | | | |
| 10.Roads, paved (%) | 0.3570 | 0.0008 | -0.0817 | 0.0691 | 0.2307 | 0.1849 | 0.6535 | 0.2412 | 0.1426 | 1 | | | | | | | | | | |
| 11.Ease of doing business rank | -0.5089 | 0.0469 | 0.0115 | -0.1543 | -0.2271 | -0.3770 | -0.7972 | -0.6505 | -0.4175 | -0.5161 | 1 | | | | | | | | | |
| 12.Domestic market size | 0.4657 | 0.5017 | 0.3620 | 0.5248 | 0.6014 | 0.5471 | 0.5433 | 0.2845 | 0.1483 | 0.3621 | -0.4550 | 1 | | | | | | | | |
| 13.GDP per capita | 0.4966 | -0.0269 | 0.0472 | 0.2134 | 0.2631 | 0.2880 | 0.7575 | 0.4709 | 0.4340 | 0.5032 | -0.6561 | 0.4019 | 1 | | | | | | | |
| 14.Inflation, consumer prices | -0.1474 | -0.0295 | -0.0176 | -0.0422 | -0.0481 | -0.0462 | -0.1552 | -0.0406 | -0.1060 | -0.1030 | 0.1797 | -0.1987 | -0.0817 | 1 | | | | | | |
| 15.Health | 0.4666 | -0.0054 | 0.0675 | 0.1359 | 0.2914 | 0.3444 | 0.7944 | 0.4520 | 0.3386 | 0.5605 | -0.6330 | 0.4101 | 0.6546 | -0.0036 | 1 | | | | | |
| 16.Public Institutions | 0.4085 | -0.0875 | -0.0690 | 0.0674 | 0.1172 | 0.2536 | 0.6734 | 0.6866 | 0.4474 | 0.4178 | -0.7083 | 0.2129 | 0.7466 | -0.0868 | 0.6565 | 1 | | | | |
| 17.Total tax rate | -0.0568 | 0.1137 | 0.0904 | -0.0102 | 0.0954 | -0.0319 | -0.1621 | -0.2834 | -0.3995 | -0.1621 | 0.2883 | 0.0217 | -0.1590 | -0.0156 | -0.2327 | -0.3253 | 1 | | | |
| 18.Time to prepare and pay taxes | -0.1026 | 0.1253 | 0.3511 | 0.0219 | 0.1094 | -0.0057 | -0.2000 | -0.2237 | -0.1417 | -0.1791 | 0.3868 | 0.1230 | -0.3144 | -0.0287 | -0.2856 | -0.4128 | 0.2397 | 1 | | |
| 19.Time required to enforce a contract | -0.0277 | 0.1347 | -0.0985 | -0.1348 | -0.1499 | -0.2490 | -0.2752 | -0.1398 | -0.1489 | -0.1724 | 0.2966 | -0.1007 | -0.2583 | -0.0707 | -0.2814 | -0.2494 | 0.0780 | 0.0524 | 1 | |
| 20.Distance in Km between capitals | -0.0397 | -0.1224 | 0.1275 | -0.0356 | -0.2011 | -0.2563 | -0.1810 | -0.0833 | -0.1325 | -0.4519 | 0.2421 | -0.1798 | -0.1615 | 0.0578 | -0.2947 | -0.2248 | 0.2875 | 0.2922 | 0.1085 | 1 |

Source: Elaborated by the authors.