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Pork and Beans? The Sino-Brazilian soybean-meat complex and the implications for Brazil and China

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Declaration

I, (name), declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature.....

Date.....

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Abstract

This thesis addresses the integration of the Brazilian soybean sector and the Chinese pork sector into a cross-border soybean-meat complex. The relationship of Brazil and China is defined by the integration of the Brazilian soybean sector and the Chinese pork sector. China's demand for soybean stems from rapid urbanization along with dietary transitions that have increased pork production. China produces pork on industrial levels, and its demand for imported soy to feed the pigs has increased exponentially. Brazil has been able to meet the soybean demands, leading to the integration of the Chinese pork sector and the Brazilian soybean sector into an interdependent relationship. The Sino-Brazilian relationship is studied through complex interdependence which highlights the emergence of transnational actors, the rise of international regimes and institutions and studies how these actors are responsible for changes in the relationships between states, by making them more complex. The Sino-Brazilian relationship has developed asymmetrically drawing attention to power distribution within the relationship and who holds what power. The concept of complex interdependence is used to assess the characteristics of the relationship.

The production and consumption centers in Brazil and China draw attention to the participation of transnational corporations influencing the soybean global trade. Traditional dominance of the soybean international trade in the hands of US-based transnational corporations is decreasing, highlighting the emergence of new actors contributing to the restructuring of the soybean industry. New sources of power emerging from Latin American and East Asia come to challenge the dominance of the US-based transnational corporations. In order to understand the interdependence of Brazil and China, as well as the changing landscape of the soybean, Brazil, China, and the transnational corporations involved need to be examined in detail. Ultimately this research finds that the emergence of new actors has effectively changed the landscape of the soybean industry through restructuring of power distributions and redirecting trade flows. Yet, the involvement of transnational corporations is unlikely to change. The reasons are the essential financial support to Brazilian soybean production, the high degree of control over technology and distribution channels, and the ongoing Sino-Brazilian interdependence.

List of Acronyms

AoA -Agreement on Agriculture -The General Agreement on Tariffs and Trade

ABCD's -Archer Daniels Midland, Bunge, Cargill, Louis-Dreyfus

FAO -Food and Agriculture Organization of the United Nations

FAOSTATS -Food and Agricultural Data

FDI -Foreign Direct Investment

GATT -General Agreement on Tariffs and Trade

GDP -Gross domestic product

IMF - International Monetary Fund

IPE - International Political Economy

GNP - Gross National Product

PRC -People's Republic of China

NTB -Non-Tariff Barriers

TNC -Transnational Corporations

UN - The United Nations

WTO -World Trade Organization

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1. Introduction

The development of the Sino-Brazilian relationship is characterized by a growing Chinese demand for soybean. State-led processes of agricultural industrialization in Brazil and China have significantly expanded the reaches of the soybean. Current Chinese development strategies are geared toward the securement of agricultural commodities, and soybean in particular, in the Latin American region as Brazil is the main soy producer. The reason for the increased Chinese demand for soybean is the exponential growth of pork consumption in China over the past four decades (Peine,2013:193). This has transformed pork production into an industrial pork production model. As meat production intensifies, so does the increasing demand for imported soy to feed the animals. Brazil has largely met this demand for soybean from China. As a result, the Chinese pork sector and the Brazilian soybean sector have become integrated into a ‘soybean-meat complex’. This complex is the object of study in this thesis.

In terms of production volume, international trade, and land use, soybeans are among the most important crops produced today. In the past 60 years global soybean production has increased by almost 1000 percent, while the land being cultivated by soy has more than quadrupled (faostat, 2014). The flexibility of this crop accentuates its diverse industrial uses, including protein and oils that can be repurposed as petroleum replacement, livestock feed, and vegetable oil. However, in context of the ‘meatification’ of Asian diets, more grains, in particular soy is fed to livestock instead of humans (Peine,2013:194). Thus, this move in China towards industrial pork production and its reliance on imports from Brazil accentuates the pressure on global grain reserves. It also raises questions about nutrition and the environmental sustainability of the soybean-meat complex.

The global soybean-meat complex has been dominated by four United States-based transnational corporations -ADM, Bunge, Cargill, and Louis Dreyfus; better known as the ABCD’s (Oliveira et al.,2016:170). These companies have been responsible for the global expansion of the soybean industry since the 1990’s post-Cold War period, until the current restructuring of the soybean global trade. These companies have been able to maintain a dominant position within global soybean industry by exploiting the relative competitiveness of US and Brazilian producers, while strategically investing in the Chinese processing industry in order to create a more profitable supply chain (Peine, 2013:195). Their involvement, in turn, is encased in policy frameworks and

market conditions that seem to favor these companies further. Being able to adapt to rapidly changing economic and political landscapes, allows these companies to influence the global economy, as well as the market economy of states. Their power and influence is further reflected within institutions.

The control held by these companies is challenged by new agribusiness actors, as well as power relations anchored in South America and East Asia. The rise of Brazil and China, in the global economy is indicative of their economic growth. China's rise is related to its economic growth, while Brazil's rise is tied to alliance-building strategies that has enhanced its power within institutions. These power relations are illustrating the reconfiguration of trade flows, and the shifting power structures reshaping the global soy industry. Which in turn, highlights the structure of the soybean industry and the extent of control the ABCD's have down the supply chain. As the world's largest exporter and consumer of soy respectively, Brazil and China exemplify how the role of transnational corporations influence the soybean industry markets. Following the soybean-meat complex in the relationship between Brazil and China, this thesis focuses on South-South trade flows. Brazil has become crucial for China to ensure its soybean demand on the global market. As China's dietary needs continue to transition to more meat-based nutrition diets -notably increased pig-consumption, the level of dependency on Brazilian soy increases. As a result, the relationship between China and Brazil has developed asymmetrically. Less dependent states will try to use asymmetrical interdependence in particular issues as a source of power. Focusing on the terms and conditions under which these actors are willing to enter an interdependent relationship, illustrates the distribution of power in each situation highlighting an actors' ability to influence situations or outcomes. Studying this asymmetry is the purpose of this thesis.

This research uses the concept of complex interdependence to analyze the integration of the Brazilian soybean sector and the Chinese pork sector. Complex interdependence, coined by Robert O. Keohane and Joseph S. Nye (1977), highlights the emergence of transnational actors, the rise of international regimes and institutions and studies how these actors are responsible for changes in the relationships between states, making their relationship more complex. As the relations in the soybean-meat complex of Brazil and China intensifies, this analytical approach to

complex interdependence draws attention to sources of asymmetry, regarding how power is distributed and who holds what power in the relationship.

Under conditions of complex interdependence, less dependent actors will try to use asymmetrical interdependence in particular issues as a source of power (Keohane and Nye, 2012:26). These interactions give rise to distinctive political processes where power over resources is translated into power over outcomes. The transnational corporations seem to have become embedded in institutions, enabling their influence over political processes, where competing and unequal states regard rules and norms as sources of power.

Complex interdependence portrays states as operating under the assumption that political agendas will be set by shifts in the balance of power and perceived threats to their security (Keohane and Nye, 2012: 10). Possibilities of new cooperation and integration may indicate that political agendas of the actors involved in this complex interdependence are driven largely by a new perception of security, primarily in economic terms. The emergence of new powers within the international soy trade serve to outline the contours of a new trade regime affecting how trade is conducted. This thesis emphasizes the interactions between the actors Brazil, China, the ABCD's, and the power dynamic parting from the 1990's post-Cold War period, that have resulted in their interdependent relationship.

This thesis aims to analyze the interdependence intensification of China's soy demands and Brazil's increasing soy production, illustrates the changing political and economic structures of the international food trade system. This thesis ultimately finds that as long as policy and production systems drive and mutually reinforce one another, the level of competition in the soybean industry is unlikely to improve.

1.1 Thesis outline

The research question of this thesis is:

What characterizes the complex interdependence that has evolved in the soybean-meat complex?

The thesis is composed of 6 chapters. Chapter 2 presents the different actors taking part in the soybean-meat complex. The first section of the chapter defines international trade in relation to food, specifically the beginnings of agricultural trade and as well as the transition of the food security concept. This is followed by a historical significance of soybeans for China as a stable

food item and its links to the soybean demand. This is followed by the Chinese economic expansion and reforms. And the development of the Sino-Brazilian strategic partnership. The chapter's intent is to demonstrate how China's economic reform and expansion led to its increasing demand for soybean, consequently integrating Brazil into the relationship. The chapter shows the need to explore further the effects China has had on Brazil, highlighting the opportunities and challenges of the relationship.

In chapter 3 introduce the theory of complex interdependence. I explain that complex interdependence highlights the emergence of transnational actors and the rise of international regimes and institutions responsible for the changes in the relationships between states, making their relationship more complex. This complexity directs attention to issues of asymmetry and who holds power in the relationship. I also present the theory of Dependence in order to show how economic interdependence is analyzed and understood by other economic theories. The chapter also discusses the extractivist economic model, as a way to showcase the Latin American scholars understandings' of the Chinese effects on the region. The chapter demonstrates that through complex independence, economic relationships- specifically uneven relationships, revolve around power. This power sources in turn shape how actors use bargaining techniques in order to maximize gains and predict outcomes in the relationship.

Chapter 4 entails the research method employed for this research. The chapter discusses the case study approach within international political economy (IPE). The primary objective of case studies in IPE is to develop and critique different theories that cover most subjects studied by a political economist. The case study strategy chosen for this thesis is the disciplined interpretative case study, because it is used to interpret or explain events by applying a known theory to new situations.

Chapter 5 presents the analysis and findings of the soybean-meat complex. This research set out to analyze the Sino-Brazilian soybean-meat complex. To do so, the concept of complex interdependence was introduced. This chapter is divided in two subsections. The first section discusses the links between institutions and transnational corporations and how they have been able to influence political processes within the international trade regime. The second section addresses the geographic displacement of soybean production from global North to global South and the implications for the Sino-Brazilian complex interdependence. The manipulation of power

resources is analyzed in terms of asymmetries, serving to illustrate how the dominant actor uses those available resources to maximize gains in the relationship. The second section details the product of the Sino-Brazilian complex interdependence: the consolidation of the soybean-meat commodity complex. The role of transnational corporations is discussed in relation to how these are able use their power to influence policy outcomes in regard to outcomes.

In chapter six the thesis concludes with the ways in which Brazil and China -strengthened through the soy interdependence, are able to affect policy and decision-making processes within institutions. Though this research is not meant to predict outcomes in the future actions of the actors involved in the soy trade, the final assessment indicates that the soybean complex comes attached to implications for rising powers. China and Brazil, along with other rising powers are forming a type of ‘counter hegemonic’ cooperation strategy that seems to challenge the United States. Ultimately, this thesis finds that as long as policy and production systems continue to drive and mutually reinforce one another, the level of competition in the soybean industry is unlikely to improve. This will continue to affect the way international trade of food is conducted as transnational corporations become deeply embedded within the institutions in charge of international trade.

2. Background

Three trends are particularly relevant to the emergence of soybean in global trade. First is the massive expansion of the cultivation, processing, and consumption on a global scale. Second, is the great expansion for uses and markets for soy and soy byproducts -such as livestock feed, fuel, and other industrial uses. And third, is a global shift in the geography of the soy industry away from traditional importers in the global North, to the current trend in the global South. North Atlantic domination up until the 1990’s has been replaced by South American and East Asian actors who are gaining control and power (Oliveira et al.,2016:169). Between the first two trends there is a link, where the drive to increase soy cultivation is also driving the development of multiple industrial uses that generate new markets for the actors involved in the soy complex. As the worlds’ largest producer and consumer of soy -respectively, Brazil and China exemplify a

new trend within global food markets, and the interactions of transnational corporations in turn, seem to outline the conditions under which a new food regime is emerging.

2.1 The international trade of agricultural products

Most people have a very vague idea of the origins and travels of their food through the industrial food system and the power relations associated with it along the way. International trade in food and agricultural products has been around for centuries. From the Corn Laws in nineteenth century Britain, to more recent political dilemmas over agriculture in the World Trade Organization (WTO). Simply put, the term trade refers to the exchange of one commodity for another. Trade as an activity has been present in all civilizations and is defined domestically as two or more individuals exchanging goods and services, while internationally the exchange occurs across national borders (O'Brien, 2016:103).

The General Agreement for Tariffs and Trade (GATT) was created in 1947 and consisted of a free trade agreement between countries with the intention to dismantle or eliminate trade barriers and increase free trade. From 1948 to 1994 the GATT provided the rules for global trade of goods. Though it lasted 47 years, it was meant to be a provisional agreement. The WTO was created in 1995, as a product of the biggest reform on international trade since the end of the Second World War (wto.org). The reform was needed in order to include not only trade in goods but also trade in services and intellectual property.

The emergence of global food markets in the 1950's powered by the economic expansion of industrialized countries -namely the United States (US), led to the adoption of the industrial agricultural model and the development of the international market for foodstuff (Clapp,2016:8). The establishment of new global rules for liberalization of international agricultural trade were the main result of agricultural trade, along with the rise of transnational corporations, deemed as dominant actors within global food production. In earlier years of the GATT, food and agriculture were treated as exceptional cases. This food 'exceptionalism' meant food was excluded from the wider norms and rules of trade liberalization. The reason was an assumption that agricultural markets were susceptible to failure and therefore would not provide public goods such as food; directly placing food security within the role of national security (*ibid*). In this context, many governments understood it as part of their legitimate role to address those

market failures. The US promoted their own political gains by regarding food as exceptional, as it enabled the continuation of a complex system of agricultural and trade restrictions. It was also accepted by other countries who followed suit.

The great range of vital functions the agricultural sector covers reflects how essential it is to all countries. Agricultural exports represent a source of significant revenue for industrialized states. In other states -those which do not have an adequate agricultural base, agricultural exports equate to the capability to support their population, as they are crucial for food security objectives (Clapp, 2016:8). As global trade of agricultural products increased, countries become more involved with either exportation or importation of agricultural products. Where the processing, trade, and distribution of agricultural commodities has transformed farmlands into highly profitable products for financial investors (*ibid*). But the way in which countries participate in international trade is very different, as it varies across states.

2.1.1 The evolution of the Food Security concept

The term food security was coined in the 1974 during the World Food Summit in response to the 1973-1974 global food crisis, fueled by increasing grain prices. Due to political concerns over the Cold War and its connection to hunger and political stability in developing countries, the term was used in reference to food supply at the international level (Clapp, 2016:4). During the 1980's and 1990's understandings of food security evolved gradually as the Cold War tensions eased and global market integration increased. These new understandings of food were then linked to individual security and accessibility to food rather than availability in societies. The reason was that enough available food in a society did not guarantee that everyone would be hunger free. Poverty and an individual's position in society were determinant factors to gaining access to food (*ibid*). During the 1996 World Food Summit, food security was once again defined to include nutritional and cultural dimensions. Its redefinition remains as the most accepted to date: "food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO,2001). However, this definition masks the profound changes in the discourse and practices of food security over the past half of a century. For example, within the US national development was the dominant discourse and practice post-Cold War. International food flows reflecting a geographical order where the US was the world hegemon and largest food producer. In order to find new markets for grains, the US used food

aid as means to distribute surplus grains but also as a calculated strategy to expand power (Zhan, 2017:153). Against this backdrop, the term food security was legitimized by the need to eradicate hunger, but it also ended up serving the interest of the agricultural business industry (agro-business) in the US. The structures of food security and the international trade have evolved over time as experiences, information, interests, and institutional frameworks have also changed accordingly. Initially the focus on food supply was at a national level, but the concept of food security expanded to include individual and global conceptualizations that integrate levels beyond the scopes of food (*ibid*). The interconnection point to the relationship going well beyond economic considerations, as it includes political, social, and ecological dimensions.

Food being predominantly treated as any other commodity, increased after the creation of the GATT. Today, food in the world economy influences the development of the current state of the food system. The international trade of food is nothing new, but the role of trade in meeting food security objectives is still highly debated. Measurements to analyze the interactions between food security and international trade aim to find common ground regarding their proper roles within the world economy. As global trade in food products continues its rapid expansion, the structure and pattern of trade may differ significantly by commodity and region (FAO,216).

2.2 The development of the Sino-Brazilian relationship

2.21 The meatification of China

The meatification of Asian diets, has significant global meaning as one of primary reasons for the growing global food demand (Clapp, 2016:6; Peine, 2013:198). Since meat production in the livestock industrial model is more caloric intensive than the production of cereals, the more profitable livestock industry is predicted to compete with the grain industry for farmland. Resulting in less crops for human consumption -food feed, and more livestock crops planted instead -crop feeds. (Peine, 2013:198).

The integration of the Chinese pork sector, and the Brazilian soybean sector birthing the development soybean-meat complex, led these two countries down different paths tracing back

to the same interests. Historical uses of soy vary across countries, because their trajectories are different in relation to different social, environmental, political, and economic conditions (Oliviera et al., 2016:175). Though the soy trajectories of both Brazil and China are related, they developed in significantly opposite directions. The main reason is the multiple uses for soy from food to feed, fuel and industrial uses.

In China, soy has transitioned from historic roots as a domestic crop with a large history of multiple uses including farming and food. Today is featured as one of the country's' most important crops. It is traded mainly in service of the livestock sector where oil seed is its main derivate, having a sub-market (Oliviera et al.,2016:176). The multiple uses of soy are possible through different varieties that relate to different regions and cultivation purposes.

The Chinese pre-reform history of soy is explained through soy's versatility and multipleness as a protein rich food for human consumption that has been an ancient staple item in the Chinese diet for the past seven centuries. The many uses of soybeans before the 1990's reflect it dietary relevance for China. The Chinese diet in its vast majority was plant-based which included domestically produced soy as a protein source, that was then further processed to make it edible (Oliveira et al.,2016:175). Soybean food products include tofu -known as the most typical human food, and other derivates such as: milk, flour, buns, and fermented soy, which is further processed into sauce. All the characteristics and similarities in products may vary depending on the region of origin, creating even more diversity. Today, China is the largest consumer of soy in the world and is being consumed in higher quantities than at any other time in history(*ibid*). The distinctive characteristics of today's consumption pattern is that while tofu and soy sauce remain a common part of the Chinese diet, people consume soy in the form of pork, which are fed with imported soybeans, and cooked in soybean oil.

Differing from China's trajectory, the Brazilian soy cultivation developed as a non-food crop, that was later integrated into the vegetable oil industry, and a sub-market of the livestock feed industry (Oliveira et al.,2016:176). Today, soybeans are positioned as a solid industrial stable of the vegetable oil and livestock feed markets. Soybean processing companies incentivized its uses for human consumption, as a food processing additive, and as biodiesel. However, the increased flexibility of crops for oilseed processors and grain traders in Brazil, has reduced the flexibility of production alternatives among the Brazilian grain and oilseed farmers.

Contrasting with the Chinese centenary legacy of soy, the crop's history in Brazil has experimental roots. Brazilians did not consume soy, and without any dietary habits -albeit Asian immigrants, the commercial expansion of soybeans in Brazil began as complement for wheat and other grains (Oliveira, 2016:360). Once the soybean production increase during the 1990's, the soybean crushing industry broaden its uses and markets for soybean products, featuring biodiesel and food additives as the main products.

Soy became an established input within the vegetable oil industry alongside the livestock feed development. After 1995, price support mechanisms and export taxes on unprocessed soy were removed, thus facilitating exportation and reducing profit margins for crushing operations (Oliveira, 2016:360). As a result, pork companies were deprived of soybean crushing, and companies controlling large volumes and thin profit margins, took control of soybean trade. By the 2000's the Brazilian soy market was saturated by the pressure of overproduction. Consequently, soybean production and processing sectors began to look for alternative markets for their products.

In 1996, China stopped being a soybean net exporter to become a net importer. In the years that followed, factors such as the agrarian expansion and subsequent industrialization of the agrarian sector, the Chinese ascension to the WTO, their commitment to the self-sufficiency policy, and rapidly changing soybean market, situated China as the largest importer of soybeans by 2005 (Peine, 2013:197). Between 1990 and 2010, the share of revenue from Brazilian international soybean trade, coming from China increased from 4 to 50 percent. Within the soybean sector, Brazil has become equally dependent on the Chinese market, as China becomes dependent on Brazilian exports.

2.2.1 China's re-emergence into the world economy

China's increased dependence on soybeans, is rooted in their reform period that restructured their economy. The year 1978 marked China's entry into an economic reform period that would transform its economy, turning into the capitalist economy. The reform was defined as a market-oriented reform working toward a 'socialist market economy with Chinese characteristics' (Huang, 1999:27). The beginning of reforms were moderate and therefore restricted accesses to international economy interaction. Thus, China's reintegration in the global economy was a slow

affair in its initial stages. The reform started in the agricultural sector with the agrarian reforms that targeted grain production since China had fallen under scrutiny over its food security capabilities.

A report by Dr. Lester Brown released in 1994 brought into question China's ability to feed its population in the future (Zhang, 2017:151). The Chinese government was eager to show their ability to produce sufficient food. A white paper was released in 1996 by the State Council of China, declaring that China would produce 95 percent of consumed grains (State Council of China, 1996). Among the specific goals of the white paper was to increase grain production, as the base of the self-sufficient policy strategy. In China, food security is understood as 'grain security' or *liangshi anquan*, because the term 'grain' is broadly defined to include cereals -like rice, wheat, and coarse grains, but also soybeans (Zhang, 2017:151). Grains are vital to the food security in China as they provide one of the main sources of human food. Grains also contribute to the production of animal feedstuff and raw materials for processed food products.

China's grain production fell behind increasing demand during the late 1980's through mid-1990's. As a result, its grain self-sufficiency rate fell below 90 percent and it was expected to drop further. To meet the grain shortage demand, the government opted for grain imports from the global market. China had been involved in a decades long process of negotiations to join the international trade regime. The imminent ascension came to a close in 2001 when China joined the WTO, becoming part of the neoliberal food regime that has dominated the world economy over the last forty years, which prioritizes free trade and the market supply of food (Friedmann and McMichael 1989; Huang et al. 1999; Clapp 2016). This gave priority to food security issues while also creating a window of opportunity for agricultural business to flourish. China had been absent from this narrative -even though it is one of the largest global food producers and consumers, by relying on non-capitalist food provision until the ascension (Zhan, 2017:153). The integration into the world capitalist economy, brought participation in crop growing, and processing and marketing of food. It 'opened up' China to both domestic and foreign investments, thus pulling it into the current global capitalist food system (Friedmann and McMichael 1989; Huang et al. 1999).

As the Chinese entry to the WTO came to a close in 2001, there were domestic and global expectations to meet. With trade there can be a rise in efficiency, new technology, and an

increase in the national economic growth (Lardy, 2001:10). On the other hand, trade, marketing, and investment liberalization were expected to accentuate negative trends in rural China in short-term goals (Huang et al.,2002:1). The mere size of China's economy and the rapid growth it experienced turned it into a crucial player in the future development of global markets for food and agricultural products. The impacts of the WTO ascension were complex, and in order to contrast costs and benefits with accuracy, different sectors of the Chinese economy were examined (Lardy, 2001:10; Huang et al. 2002:3). However, most concerns concentrated around the impact on China's domestic agricultural production, price and market, employment, and farmer's income within short term goals (Huang et al. 1999:19). These concerns derived from the need to sustain agricultural growth, achieve food security goals and, whether farmers' incomes would increase with the process of trade liberalization. Studies at the time indicated that China's economy, and the rest of the world would benefit from the ascension (Anderson, 1997; Huang et al.,1999; Huang et al., 2002). The assessment was based on the fact that the Chinese reform process before WTO insertion showed that China's foreign trade regime had gradually evolved from a highly centralized, structured and import substitution regime to a de-centralized, more market-oriented and export promoting regime (Huang et al.,1999:18). It was indicated at the time that even though China had made significant progress with its economic reform and trade liberalization, it continued to largely monopolize international trade in agricultural products, as a result, the reforms had significantly impacted the structure of the Chinese economy. Therefore, the Chinese government called for further liberalization in terms of tariff reduction, limiting non-tariff measures to control agricultural imports, additional commercialization of state trading, and improvements of the foreign trade management (Huang et al., 1999:19).

The impacts of trade liberalization on agriculture were striking not only on agricultural products' price and trade, but also on domestic production and consumption. Estimates of the impact on the domestic economy predicted a fall in the domestic price of grains that would raise the grain consumption and slow down the production, thus the domestic grain production would fall behind the domestic consumption (Huang et al., 1999:20). Ultimately, the Chinese government was encouraged to give a more significant role to the global market within their economy, to determine trade patterns in order to maximize comparative advantage gains (Huang et al. 2002:47). This included specific crops, likely to result in a fall in price and rise in imports. of

Feed grains like soybeans -at lower prices, could translate to an increase in livestock producer's competitiveness.

2.2.2 Navigating foreign investments

To this end, in 2000 the 'going out' strategy was formally introduced in the *Tenth Five Year Plan of China* to encourage overseas investments (Yao and Li,132-133). Chinese companies are encouraged to invest and operate overseas to get access to international markets, foreign resources and advanced technologies with support from the Chinese state (McKay et al.,2016:595). In terms of internal administration, the state seems to simplify the examination and approval procedures for foreign investments. Economically, the state offers subsidies, tax reductions, venture opportunities, and low interest loans to domestic investors, specially to state owned enterprises (SOE). Politically, the Chinese state aims to maintain a stable investment environment for Chinese foreign direct investments (FDI) through bilateral investment treaties and free trade agreements (*ibid*). Since the introduction of the Tenth Five Year plan, FDI's from China to other countries has increased rapidly, roughly 20 times between 2004 and 2013. As a region rich in natural resources with a high demand for manufactured and industrialized goods, China seems to have targeted Latin America for the expansion of Chinese markets, but more importantly for its raw materials, especially in the Brazilian agriculture sector. Most of Chinas extractive projects, 73 percent, are in the agriculture business 'agrobusiness' sector in the forms or mergers and acquisitions (*ibid*).

The rapid development of the Sino-Brazilian relationship is highlighting a shift from conventional understandings of political and economic behavior. The characteristics of Brazil and China's trade and investments point to a new version of North-South relations, with behavior suggesting a growing interdependence between these two emerging big economies. A new South-South type of cooperation suggests that even though there is strong competition, the increased interaction between these two countries along with the institutionalization of their economic ventures is pushing these countries closely together to see each other as true partners in a newly conceived, socially different transnational dimension.

2.2.3 A strategic partnership: Brazil and China

The reemergence of China brought changes to the global economy and trade relations, this was of particular importance for the agrobusiness/or more general business in Brazil and their bilateral trade relationship with China. China's relationship with Brazil is characterized by common interests: increased demand for agricultural commodities which led to new partnerships abroad in order to supply and secure raw materials.

Brazil and China have held diplomatic relations over the past 40 years. Economic cooperation and terms of trade during the 1970's and 1980's were determined by Brazil, who had a more advanced industrial structure that exported steel and petrochemical products in exchange for petroleum (Wilkinson, 2016:1). By the 1990's however, the current patterns of trade were already present, as more than half (56% in 1991) of Brazil's export earnings came from iron ore and soy oil. Most of the imports from China at the time were cheap final consumer goods, reflecting China's rapid industrialization. In 1993, China declared their relationship with Brazil as a 'strategic partnership'. The partnership was further consolidated upon China's insertion into the WTO, Brazil had been a member of GATT since 1948 (wto, 2018). The convergence of diplomacy, trade, and investment was further cemented by infrastructure and transport as permanent features of the cooperation agreements.

For this purpose, China implemented the 'going out policy'. As for Brazil, the policy consisted of investments in transport, energy, and infrastructure. The policy entailed investments in extractive projects that offered lines of credit, assuring minimal interference with the receiving country's fiscal and trade policies (McKay et al. 2016:595; Oliviera et al. 2017:353). The Chinese strategy facilitated the financing of strategic infrastructure as well as raw material extraction projects, enabling them to accept commodities as payment. The processing and shipment of the raw materials often required recipient countries to contract Chinese construction firms and equipment, consequently enabling a type of South-South cooperation. The fact that China makes use of such economic measures was indicative of the imperative need for securing access to raw materials.

For Brazil, the implications of the Chinese demand for raw materials and the ongoing expansion of the extractivist development model opened the door to new markets and trade opportunities away from the US market dependability. As agrarian changes presented themselves in China, agriculture has become more industrialized in Brazil. Crops are more flexible in their use as food,

feed, fuel, and industrial materials. Consequently, integrating several economic sectors in the dynamics of the agrarian changes (McKay et al. 2016:593).

Industrial growth and crop flexibility have increased Brazilian production over the last two decades, which gives favorable prices to China. As a crop defined largely by the value of its co-products -namely soybean meal and soybean oil, soy could be regarded as a fundamentally flexible crop (Oliveira, 2016:168). Soybean has become a key agricultural commodity in Sino-Brazilian relations, since China accounts for 64 percent of the world's soybean imports, and nearly 60 percent of which are produced in Brazil. While the majority of the soybean production originates from Latin America, China's influence over the market has implications for producers worldwide. This small grain is an essential component of China's multibillion-dollar (USD) grain-feed-meat complex as China is now the largest producer and consumer of pork (McKay et al.,2016:595). The Latin American region collectively produces more soybeans than any other region, with soybeans coming mostly from Brazil and a small amount from Argentina; which makes China an important and crucial market for its exports.

2.2.4 Arising issues

Brazil has become a strategic resource supplier for China's economic growth. Though China has great demand for other raw materials in the region such as minerals, petroleum, and biomass, this research concentrates on the agriculturally based resource, soybean. China selected soybean the grain needed to sustain their food security self-sufficiency policy, which China has been able to uphold through the last decades of accelerated economic growth (Wilkinson, 2016:3). The level of Chinese dependence on soy is concerning on a global scale because of the size of the demand. Even moderate imports can have a decisive impact on world trade due to China's size and population. Food security concerns become more central as China's per capita income advances and urbanization accelerates. The scale of even small levels of raw materials dependence in today's economy makes China's exclusive reliance on world markets and trade increasingly problematic(*ibid*). Chinese strategies to ensure resources are global, but Brazil became central to the supply of grains and meat for the Chinese dietary transition, due to soybeans.

Brazil stepping in to meet the Chinese demand for soybean, has led to the integration of the Chinese pork sector and the Brazilian soybean sector into an economic interdependence of this

commodity complex. The emergence of this commodity complex signals a departure from the traditional production consumption center of soy -which previously belonged to the US, towards a new South-South type of trade flow. The significance of the Sino-Brazilian economic interdependence suggests that big emerging economies might no longer require Western economies to mediate their economic transactions, as they seem to be shaping the structure of the global economy.

3. Theoretical framework

3.1 The interdependence of the soybean complex

In this section I introduce the concept ‘complex interdependence’ that was coined by Joseph S. Nye and Robert O. Keohane during the 1970s, in their book *Power and Complex Interdependence*, (Keohane and Nye,1970). I explain that complex interdependence highlights the emergence of transnational actors and the rise of international regimes and institutions responsible for the changes in the relationships between states, making their relationship more complex. This complexity directs attention to issues of asymmetry and who holds power in the relationship. To be able to qualify and assess such relations of power, the concepts of vulnerability and sensitivity are introduced. Yet power, in particular the uneven relations of power between states, has been an important issue in other theories of trade. I therefore add to the focus on complex interdependence a discussion of the Latin American school of Dependency theory presented by Thetonio Dos Santos, (Dos Santos, 1970). I also present the extractivist economic model, presented by Maristella Svampa (2013). I explain how the unequal relations of power that constitute trade relations between developed and underdeveloped state are portrayed by Latin American scholars. In the final section I explain how I approach the study of relations such as between China and Brazil, to outline interdependence and power asymmetries in regard to the soybean trade.

Until the outbreak of the global financial crisis in 2008, the Chinese economic growth was the result of strong internal expansion of the economy driven by high productive investments that transformed the structure of Chinese production. In 1978 the Chinese government seeking to confirm the sovereignty of the State over the territory, and the population, created an economic

development strategy whose main goal was the modernization of industry. As a result, China experienced increased participation in global trade that subsequently increased competitiveness in global markets and reflected the use of trade policy as a mechanism for the promotion of exports (Curado,2015;90). Upon insertion in the WTO in 2001, China became increasingly dependent on world markets, and its current development strategies are geared towards supplying a broad range of raw materials through extractivist projects in order to fulfill the self-sufficiency policy goal. While China's strategies to ensure resources are global, the Latin American region -mainly Brazil, are essential to the supply of grains. However, food security concerns become more central as China's per capita income advances and urbanization accelerates. Even small levels of food and raw materials dependence -especially in today's volatile markets, makes China's exclusive reliance on world markets and trade increasingly problematic (Wilkinson et al.,2016:4).

Concurrent to China's economic rise into the world economy, for the last four decades the ability of the world's farmers to feed the growing global population has drawn concerns as food crises increase in frequency and severity, spiking global food prices. Although there are many reasons for the price volatility, the emerging production and consumption centers in Brazil and China are given special attention. The 'meatification' (Weis, 2007) of Asia is seen as the main culprit for putting pressure on grain reserves, as more grains and oilseeds are fed to livestock instead of humans (Peine, 2013:194). The Chinese demand for agricultural exports is a significant factor, with responses to high price fluctuations increasing the risks associated with the Chinese dependence on global trade. It also draws attention to the re-configuration of trade flows and the role of transnational agricultural business.

China's pork production has transitioned into an intensified industrial model, and its demand for imported soy to feed the pigs has increased exponentially. Brazil has been able to meet such demands, leading to the integration of the Chinese pork sector and the Brazilian soybean sector. Thus, creating an interdependent relationship. The United States (US) had been the leading producer, processor and exporter of soybeans during mid-twentieth century, and currently US-based companies control most of its production, technology and trade. However, since the 1990's there's been a shift in the political geography of soy. Brazil accounts for 57 percent of world soybean exports, while China accounts for 65 percent of world soybean imports (Oliveira et

al.,2016:168). The Brazilian response to Chinese demand has driven the international soy trade away from traditional importers in the North, as Brazil surpassed the US in 2016 as the main soybean exporter to China (*ibid*). As the world's largest consumer and producer of soy respectively, China and Brazil highlight the new landscape of the global agricultural market along with the actions of transnational corporations.

The following sections elaborates on the characteristics and implications of the relationship between the Brazilian soybean and the Chinese pork industry.

3.1.1 Relationships under Complex interdependence

The term interdependence means mutual dependence, but within world politics is associated to situations defined by reciprocal effects among states or among actors in different states. These situations are represented by outcomes from international trade, or transactions. Trade is defined as flows of money, goods, people and messages across international borders. Keohane and Nye (2012) present three main characteristics of complex interdependence: multiple channels of communication, an absence of hierarchy in issues, and a reduced role of military force for policy.

1-Multiple channels of communication: allow for societies to connect by enabling interstate, trans governmental, and transnational relations. Connects societies through formal and informal channels between governmental elites and formal office arrangements. It also connects non-governmental elites and transnational organizations.

2-Absence of hierarchy: The absence of hierarchy in issues implies that the agenda is not consistently set or dominated by military security.

3- Reduced military: In situations of complex interdependence, governments would not use military force against other governments within their region. They would however use it against those outside the region. The reason is twofold: military force becomes irrelevant when resolving economic issues or disagreements among members of an alliance; but at the same time is relevant for political and military relations with a rival bloc. For the former situation interdependence is applicable, but not for the latter.

This research aims answer how can we define the relationship between Brazil and China following the soybean trade. Relationships under interdependence are characterized by the effects that trade will have on the countries involved, which will be determined by the constraints or costs associated with them. These costs are not always equal between the countries involved.

Because where there are reciprocal -but not necessarily symmetrical cost resulting from transactions, there is interdependence (Nye& Keohane, 2012:8).

The relationship between Brazil and China is an interdependent relationship characterized by the soybean commodity trade. The main feature of this interdependence is China seeking to secure agricultural resources to achieve self-sufficiency policy goals, started to rely on Brazilian soybeans in exchange for cheap final consumer products. Over time the demand expanded, and started showing disparities, rising from USD9 billion to over USD 80 billion between 2004 and 2013, making up an average growth of 30 percent annually (Wilkinson et al.,2016:1). China initially started exporting cheap manufactured goods that flooded the Brazilian market. Chinese exports shifted over time from cheap manufactured consumer goods to machines, equipment, and electronic goods, indicating a growing penetration into different sectors of the Brazilian market. Whereas almost 75 percent of Brazilian exports consisted of soybeans and iron ore. Trade relations between the two countries inverted completely by 2010, when Brazil assumed the role of raw material supplier, contributing to China's rapid industrialization (*ibid*). Meanwhile, in 2010 Brazil accounted for only 3 percent of China's imports and 1.5 percent of its exports. Thus, highlighting a high disproportionate ratio of the cost and benefits of their interdependent relationship. In 1970 Brazil had made big industrial advancements that placed the Brazilian economy ahead of the Chinese. But by 2012 China's gross domestic product (GDP) had grown 6 times that of Brazil, and accounted for 11.7 percent of total global trade, compared to Brazil's 1.3 percent (*ibid*).

The term interdependence goes beyond situations defined by mutual benefits, it seeks to integrate the concept into a broader framework. The result is a perspective indicating that an interdependent relationship will always be characterized by costs, as interdependence restricts autonomy (Keohane and Nye, 2012: 16). Complex interdependence argues that since it is not possible to determine beforehand if the degree of benefits from a relationship will exceed its costs, it will depend on the values of the actors involved as well as the nature of the relationship to determine the costs. The characterization of a relationship as 'interdependent' does not guarantee mutual benefit (*ibid*). In this sense China has been remarkable in its ability to maintain its level of self-sufficiency during three decades of impressive economic growth, however it has done so based on a selective dependence of raw material imports. However, the nature of the

Sino-Brazilian relationship is characterized by China relying on Brazil to secure access to soybeans, while the reliance also presents an opportunity to penetrate the Brazilian markets. Brazil -the leading exporter of soybeans, is able to meet such demands. But in return is faced with the costs of foreign direct investments that seek to increase control and access over raw material resource flows in Brazil (McKay et al.,2016:596).

Nye and Keohane (2012) propose two different perspectives to analyze cost and benefits in an interdependent relationship. The first focuses on joint gains and joint loses from the actors involved and is inspired in the classic economic approach of comparative advantage. Coined by Ricardo (1817), the principal of comparative advantage claims the reason why actors engage with international trade is that undistorted international trade will provide overall net benefits or simply put, mutual gains. That may be so, but the Ricardian interpretation of international trade excludes *how* those gains are to be divided, which is one of the political issues that complex interdependence hopes to address. It also leads to the second perspective, focused on *relative* gains and distribution.

Within the complex interdependence framework is not sufficient to focus on mutual gains, but instead is necessary to ask, ‘who gets what’? Measurements that increase joint gains are not free of distributional conflict. Fox example -though not in similar respects, an analogy of the distribution of a pizza indicates that distribution does not guarantee the size of the slice, nor the amount of pizza toppings per slice. Governments and non-governmental organizations will try to increase their shares of gains from a transaction, even in circumstances where both actors benefit significantly from the relationship (Keohane and Nye, 2012:9). The clarification serves to understand that the purpose of complex interdependence is not to bring in a new world of cooperation by replacing the old world of international conflict.

Interdependence presents repeated practices over time between states, however, political and economic power structures are not always clearly defined. The transactions between Brazil and China in building a strategic partnership highlight great disparity. Traditional international politics dictates that if one side seeks to maximize gains by upsetting the status quo, it comes at the expense of the other side. Contrasting, views of the politics of economic interdependence involve competition, even when large benefits are to be expected from cooperation (*ibid*). The distinction is necessary because most relationships among states and other actors are rarely

evenly balanced. Complex interdependence is not meant to solely describe situations of evenly balanced mutual dependence. The asymmetries of dependence provide the sources of influence for actors in their dealings with one another.

Relationships of interdependence are characterized by asymmetries in power. In such relationships, the actor in the most powerful position can influence the other. The source of this powerful position can be related to the type of resources that this actor controls. Actors presenting a lesser degree of dependence often use the interdependent relationship as a source of power when bargaining over certain issues or by exercising their influence over other issues. The framework can be applied to relationships between transnational actors and governments as well as interstate relationships (Keohane & Nye, 2012:8). Power can be measured by type of resources or by effects on outcomes. But to understand power there needs to be a deeper understanding of the dynamics in distribution of power among states.

3.2 Asymmetrical interdependence as a source of power

Power in simple terms can be defined as the ability to achieve one's goals. Robert Dahl (1961), defines power as the ability to get others to do what they otherwise would not do. But in order to be effective, one needs to become aware of other's preferences. Joseph S. Nye (1990) makes distinctions about power and its sources, declaring that because the ability to control others is associated with the possession of resources, political leaders define power as the possession of resources that range from population, territory, natural resources, economic size, military forces, and political stability among others. This interpretation may indicate that power is concrete, measurable and thus, predictable. It can also indicate that power has the ability to cause change from one form to another. Since some countries appear to be better than others in converting their resources into effective influence, power conversion may become a problem when thinking in terms of resources. Power conversion is the capacity to convert potential power –as measured by resources, to realized power -as measured by the changed behavior of others (Nye, 1990:178). Becoming aware of a states' ability to convert power and its possessions of power resources, may be the key to predicting outcomes accurately. Nye (1990) also mentions the relevance of determining which resource can provide the best basis of power in a particular situation, because

if chosen incorrectly -like for example the use of force, may be inappropriate for the situation or too costly.

It is difficult to be clear about the relationship of particular resources. For this study, one of the relevant measurements of power is power based on economic terms as it pertains to the first sub-question regarding how political and economic implications of the soybean trade affect the Sino-Brazilian relationship. As other sources of power, economic power cannot be measured in terms of perceptible resources (Nye,1990:180). Outcomes usually depend on bargaining, bargaining depends on the relative costs it may have in a particular situation, and how able an actor is to convert that potential power into outcomes. In this case, relative cost will be determined by the amount of measurable economic resources of a state, and more importantly by the degree of its interdependence in the relationship (*ibid*). This means that the actor with the lesser degree of interdependence has the potential power to exercise a higher degree of influence.

Power also means understanding structures. Susan Strange (1988), argued that there are four principal structures that constitute power: security, money, trade and information. The key point being that if a powerful state was able to dominate one or more structures, it would become a decisive actor in world politics. But in this argument is imperative to ask, who has the power to set the structures? Taking into account that the ability to act or to exercise power requires an understanding of the framework in which actions are taken. Traditional portrayals of power show military power as dominant over all other forms of power and thus, states with the most military power, controlled world affairs. But the resources that generate those power capabilities have become more complex. From the perspective of complex interdependence, power is defined as the ability of an actor to get others to do something they would not otherwise do, but at an acceptable cost to that actor. Asymmetrical interdependence can be a source of power by controlling resources or the potential to affect outcomes (Keohane & Nye, 2012:10).

Those relationships of interdependence that are characterized by asymmetries in power, show the actor in the most powerful position as able to influence the other. The source of this powerful position can be related to the type of resources that this actor controls. A less dependent actor in a relationship would indicate significant political resources, because changes that might take place in the relationship -whether initiated or threatened by that actor, would be less costly than to its more dependent partner (*ibid*). This advantage, however, does not mean that those political

resources will lead to similar patterns of control over outcomes -since as previously mentioned by Nye (1990), bargaining is usually the means of translating potential into actual effects or outcomes, meaning power conversion.

To understand the role of power in complex interdependence, two dimensions of power need to be defined: sensitivity and vulnerability. The terms were coined by economist Richard Cooper in 1961. The definitions used by Keohane and Nye (2012) are built upon those of Cooper, however, differ in meaning. Sensitivity in complex interdependence refers to how quickly the actions of one state can be experienced or felt by another state, and how great the cost of such transaction is. It describes the degree of response within a policy framework. A policy framework can be interpreted as a set of procedures or goals used in transactions or decision-making processes, with the intention to guide more detailed policies processes. Sensitivity is measured by the costly effects of the changes in transactions on states or governments and is created by the interactions within the policy framework. Sensitivity assumes that the sets of policies within a framework remains unchanged (Keohane and Nye, 2012:11). However, if one state was able to change its policies, then the other actor would be left vulnerable to those changes. But then this begs the question, if the framework were to be changed, and more alternatives became available for interdependent actors, what is the cost of adjusting to the changes outside the framework?

This question finds its answer in the second dimension of power, vulnerability. The vulnerability dimension of interdependence details the availability and costs of the alternatives actors are faced with (Keohane and Nye, 2012:11). When actors do have alternatives or options, they are less vulnerable to the changes deriving from a changed framework. The vulnerability dimension carries more relevance within an interdependent relationship because it focuses on the actor that is able to set the rules of the game, thus helping the understanding of the political structure of the relationship (*ibid*). For example, the relationship between food and international trade is complex because policy directions are not always straightforward or equal across countries, as there are internal and external factors to consider. Policies supporting extreme reliance of imported food can bring vulnerability and external shocks like a spike in prices that can destabilize a country's import bills over small periods of time. Excessive dependability on agricultural exports as primary sources of foreign exchange, can have detrimental consequences: long periods of price

decline, or the opposite -highly volatile prices; either of these factors impacts the food producers (Clapp, 2016:8).

Asymmetrical interdependencies are sources of power among actors. But just as important as it is to understand the manipulation of asymmetries, it must be clarified that asymmetrical interdependence alone cannot explain bargaining outcomes. Because power measured by resources might look different than power measured by influence or outcomes, the more dependent state might be willing to make a bigger commitment than its less dependent partner, (Keohane and Nye,2012:16). The current global landscape of the soybean trade industry is presenting challenges for the traditional dominance of the sector by American transnational corporations. These companies have had control over the industry for decades. The Chinese and Brazilian governments, farmers, and domestic processors on both countries look for ways to circumvent the power and control these companies have over the sector (Peine, 2013:193). Thus, trying to have control of both resources and outcomes.

In the broader sense, the purpose of analyzing how complex interdependence measures power in terms of outcomes is not to predict the success or failure of an actor's ability to influence outcomes. It seeks to present initial bargaining advantages for actors on either side, like knowing the available options before making an informed decision. If or when the predictions based on patterns of asymmetrical interdependence are incorrect, the reason is often found in the bargaining process which is what translates having power over resources, into having power over outcomes (Keohane and Nye,2012:16). There are other relevant factors to consider when measuring power, that may also affect outcomes or behavior. Since relationships of interdependence often happen within frameworks of norms, rules, and procedures that regulate the behavior, and control the effects of the interdependence (*ibid*). The sets of governing arrangements that affect interdependent relationships are referred to as international regimes.

3.3 Regimes and Interdependent Relationships

International regimes have been conceptualized as the variables standing between causal factors - such as power or interests, and outcomes and behavior. Stephen Krasner (1982) defines regimes as the principals, norms, rules, and decision-making procedures around which the expectations of

actors are met in a particular issue or area. Krasner (1982) breaks down the terms of regimes into: principals -understood as beliefs of facts, causation, and rectitude; norms, which are standards of behavior defined in terms of obligations and rights; rules, are specific prescriptions for action; and decision-making procedures are practices for implementing collective choices.

Different approaches to the relevance of regimes will naturally generate different answers. Susan Strange (1982), argues the concept of regime is misleading because it conceals basic economic and power relationships. Strange questions the usefulness of the concept of regimes because it is ambiguous and imprecise. The reality of international cooperation and conflict as seen by Strange, is rooted in a limiting, state-centric paradigm. Therefore, the argument of regimes is rejected as it does not have any significant role for principals, norms, rules, and decision-making procedures. Contrasting, Krasner (1982), promotes an international regime of asymmetrical and power maximizing states acting within an anarchic environment. Proponents of this approach include Robert Keohane (2012), who adds that under certain restrictive conditions involving the failure of individual action to secure optimal outcomes, regimes seem to have an impact -even in an anarchic world. Sometimes the rules or procedures of world politics do not appear to be as complete or as organized as in domestic political systems, and institutions seem to lack autonomy and power. This weakness of international organizations gives the misleading perception that regimes are irrelevant, but specific international regimes have important effects on interdependent relationships (Keohane and Nye, 2012:17).

Keohane and Nye (2012) define regimes ‘as sets of governing arrangements that include networks of rules, norms, and procedures that regulate behavior and control its effects’ (Keohane & Nye, 2012:16). For the purposes of complex interdependence, the relationship between regimes to outcomes and behavior is of particular interest. So *how* do regimes make a difference for interdependent relationships?

Regimes need to be understood as long arrangements carrying change through every shift in power or interests. Clapp (2016) argues there are gaps in the world economy created by its expansion that are anchored in its operational capabilities. Because it is within these middle spaces where norms, practices, and rules that govern the world economy are constituted, they become the driving force of its expansion, thus, carrying those changes with it. Understanding the shared linkages between regimes and its driving forces may explain these middle spaces and

how they have developed to the point of becoming essential for explaining food outcomes in rich and poor countries alike (Clapp, 2016:8).

The degree of relevance of a regime, will be given by actors. Following the trends of the soybean trajectory, the global restructuring of the soybean processing industry shows new patterns of power. Transnational corporations (TNC's) can have enough power to influence the agenda and rules of regimes, in this case the international trade regime. Though we often speak of countries trading with one another, it is companies that do the work of moving goods across national borders. Therefore, they can influence the decision-making process of states in order to align their interests, with those of the regime (Peine,2013:194). The Brazilian and Chinese soybean interdependence exemplifies a new world order of global agricultural markets, they highlight the actions of transnational corporations in those markets, which in turn reveal the contours of a new trade regime (*ibid*). The international trade of soybeans is often framed as dominated by importers, exporters, producers, and consumers that seem to represent conflicting national interest, but the fact is this small group of transnational corporations has controlled the industry for decades. These companies have consistently exploited the competition between the US and Brazil as soybean producers, while they strategically invest in the Chinese soy processing industry, in order to maximize profit by creating a supply chain (*ibid*). These decisions are in turn made within a policy framework and market conditions that are applicable to multiple situations or cases.

The structure of the international system is of special relevance for interdependence. The structure of a system is understood as the distribution of capabilities among similar units. Because in international political systems the most important units are states, their relevant capabilities are treated as their power sources (Keohane and Nye,2012:18). Structure then, can be understood as different from process within a regime because the latter refers to the bargaining behavior within a power structure (and not the source of power itself). The structure of the system -the distribution of power among the states, greatly affects the nature of the regime; the regime in turn, affects the political bargaining and daily decision-making processes within the system (*ibid*). Transnational corporations appear to be primary economic actors in international trade. These companies are faced with rapidly changing political landscapes, since supply chains are spread across vast geographic spaces. Over the last four decades, the leading soybean trading

companies managed to successfully integrate a soybean supply chain that has dominated markets in every significant soybean producing and consuming country in the world (Peine,2013:195). Thus, integrating transnational corporations into regimes. The supply chain formed by the transnational corporations shapes the control these companies have because of the depth of involvement they have in almost every step of the soybean processing: they are crucial in financing Brazilian soy production; they also hold a monopoly over the soy processing technology, and they control transportation (*ibid*).

Per the three tenets of complex interdependence, within world politics there are different channels of communication. Regimes allow for other actors -not just states, to participate directly and actively in the changes in structures, rules and norms. In the Sino-Brazilian relationship, transnational corporations seems to be relevant actor with a degree of power that allows them to affect outcomes and patterns of behavior. Which is connected to the second tenet of interdependence, the lack of hierarchy in issues. Reflecting that economic issues challenge the political agenda. The third tenet -reduced military force, may suggest the strongest indication of fundamental political and economic shifts. The political agenda appear to be driven largely by the perception that security is primarily economic. Thus, becoming clear that the traditional understanding of military force, (security) is no longer the priority.

3.4 Theory of Dependence

The theory of dependence aims to highlight relations of dependence between countries. It proposes closer analysis of the internal structures and external relations of dependent countries in order to overcome their dependence. It interprets the internal state of countries as a part of the world economy. Latin American scholar, Theotonio Dos Santos (1970) describes dependence theory as ‘a situation in which the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected to’ (Dos Santos,1970:231). The relationship between two or more economies and their relations to trade assumes the form of dependence when the dominant state is able to expand, becoming self-sustaining; while the economy of the dependent state, is only able to expand as a reflection of

that expansion. Dependence theory urges the study of the internal laws of development in those countries that are the object of expansions, since they seem to be governed by them.

As a product of the Chinese economic expansion, agroindustrial crop production in Brazil has increased dramatically. Though there is great value in the securing of the market -thanks to the growing Chinese demand, it has also reduced the Brazilian market. Just four primary products -soybeans, iron, copper and crude petroleum, make up 70 percent of exports to China (McKay et al.,2016:593). While Chinese exports are more diversified, ranging from telecommunications equipment, data processing equipment, boats, and motorcycles; it seems as though the terms of international trade allow the Brazilian economy to expand as far as the Chinese demand allows it to. These terms of trade render the Brazilian economy extremely dependent on just a few primary commodities, which are highly subjective to the volatility of the international market (*ibid*).

Dos Santos (1970) claims that the process of constituting a world economy integrating national economies into the world markets of commodities and capital, will result in unequal relations produced by this market. The relations are unequal because the development of parts of the system happens at the expense of the other parts (Dos Santos,1970:231). Trade relations that are based on monopolistic control of the market, will lead to transfer of surplus generated on the dependent country, but favoring the dominant country. As a result, the dominant country exercises that power, which translates to benefits and profits (*ibid*). And thus, increasing their domestic surplus while strengthening their control of the economy of other countries.

3.4.1 The extractivist model

Another line of Latin American scholar literature (Svampa,2013), regarding the effect of China on the region, divide the expansion between a neoliberal approach and the theory of development. The neoliberal approach is focused on the positive effects of Chinese growth and the complementarity of its trade relations with Latin America. The neoliberal discourse has been updated, and while it continues to emphasize the idea that states are subordinated to markets, now states are subordinated to supranational regulatory institutions. The development discourse returns as a concept related to growth, productivity and modernization. The difference is, it resurfaces in relation to the development of extractivist projects and not an ideology of

industrialization. This new approach is presented by Svampa (2013), who illustrates the negative impact of China in the structure of the Latin American regions' production. It showcases the accelerated effects of trade in the region, mainly, the reprimarization of the export agendas of countries such as Brazil.

Shifting from the 1990's neoliberal doctrines focusing on finance, Svampa (2013) presents a new economic model based on large-scale exports of raw materials. The exploitation and export of natural resources is by no means a new activity in the region. But while there is ample evidence attesting to the growth of extractivist methods during the twentieth century, (Oliveira, 2016:163; Curado, 2015:89) the system of accumulation seems to have changed. Projects aimed to monitor, extract, and export raw materials without added value, have intensified. This economic model is recognized as the starting point of a new political and economic order sustained by the volatility of international prices for raw materials and consumer goods. It also reflects the high level of demand in developed countries and rising economies (Svampa, 2013:117). Contrasting with the 1990's -when the Latin American continent appeared to be reinvented by a single neoliberal model, the new economic model is less described by a single discourse, and more by a collection of tensions and contradictions that are hard to integrate. Unlike past neoliberal doctrines, the difference is that this new economic model is characterized by remarkable margins of profitability and high growth rates of Latin American economies.

Svampa (2013) refers to this economic model as the 'commodities consensus'. Talks of a consensus include economic order, but it also concretizes a system of domination. The reprimarization of Latin America through raw materials appears to be directly linked to the loss of food sovereignty as it relates to large-scale exports and large demand for raw materials. These are destined to become livestock feed or biofuel due to increasing population, increasing prices of other energy sources, and environmental conditions. Accumulation within this commodities consensus adds to the dynamic of dispossession of land, resources, and territories while it creates new forms of dependency and domination (Svampa, 2013:118; Warner, 2015:1178).

The result of the reprimarization process appears to be the consolidation of a developmental model based on an extractivist economy. Supported by an over exploitation of non-renewable natural resources, and the expansion of borders to territories that were once considered unproductive (Svampa, 2013:118). The extractivist economy is characterized by transport

infrastructure projects (waterways, harbors, etc.), energy projects, and communication infrastructure projects. The extractivist economic model is consolidated by the participation of transnational corporations in large scale projects that pose major impact and risks on social, economic and environmental issues within the territories where they take place (*ibid*). This new consensus highlights a series of ambivalences, and paradoxes; marking the coexistence and interconnections of neoliberal ideology, and new progressive development (Curado,2015: 98). Thus, the commodities consensus can be interpreted as both a series of ruptures, and a series of continuities that unlike its' predecessors, establishes rules that accept new asymmetrical and political relations in Latin America.

This account of Latin American scholars that highlight in different ways the degree of impact of both neoliberal ideas and the reprimarization of Latin America forms a pattern describing the degree of China's immersion on the region's economy. The theory of dependence may in part accurately describe that the dependence of Latin American countries on other economies deepens and aggravates the fundamental problems of their own economies. However, it does so by proposing that the dependent state -Brazil and its development, is conditioned by the economic development of China. But this approach does not contemplate the benefits posed by such interdependence within the international system. Through the soybean trade China challenges and benefits Brazil. In spite of perceived competitive behavior, the trajectory of the soybean trade, the increase interaction between these two countries, and the economic profits deriving from the industrialization of their economic sectors, is driving these two countries to see themselves as partners.

Traditional theoretical understandings within world politics recognizes states as the main actors within the international system. As such, states are perceived as the most relevant actors capable of exercising power. In interpreting the relationship of Brazil and China through complex interdependence the aim is to understand the relationship from the different actors points of view. Through complex interdependence other actors, find a place within the international system. The main actors forming this complex interdependence -Brazil, China and the transnational corporations conducting trade on behalf of these countries. These corporations have become important actors within international institutions like the WTO, where they are able to influence decision making processes that usually align with the desires or wishes of the

‘dominant’ states, within an interdependent relationship (Peine, 2013:196). It is precisely the ability for actors to communicate via multiple channels of communication that help provide the political framework within which international economic processes occur, therefore understanding regimes is crucial to understanding the politics of interdependence (Keohane and Nye, 2012:9)

China has been able to expand -due to a gathering of favorable circumstances, ranging from the economic reforms that restructured their economy, to the subsequent policies the reforms generated. Namely, those policies supporting the expansion of foreign direct investment projects. The Chinese economic growth is what has come to transform Chinese economic power into their resource. However, China has been able to exercise set power and influence the relationship with Brazil and define it by the extent of the Chinese soybean demand.

Understanding the social, ecological, and economic relationships between food and power, may indicate different dimensions of relations between actors in the international system, with some experiencing beneficial and fruitful ties while others have a disproportionate share of benefits and costs. The terms of complex interdependence seem to come closer to explaining economic issues of interdependence, such as the relationship, characterization, and terms of economic interdependence between some countries. Therefore, it is the approach chosen for this study to discuss the Sino-Brazilian soybean interdependence.

4. Research Methodology

4.1 The Disciplined Interpretative case study approach

This chapter focuses on the research design, and methodology used for this research. The methodology used is qualitative desk research. The reason to choose qualitative research as a research method is that it enables the description of how individuals interpret their social world by their reality -understanding that the set reality may shift continuously (Bryman et al.2002:2). The reseach is based on theoretical analysis, with a selection and discussion of reviwed

theoretical and descriptive material about a specific topic. The focus of the qualitative desk study method is to understand the main concepts of theories (*ibid*). This research is literature based, and was conducted through a case study. A case study is defined as an approach to research that facilitates the exploration of a phenomenon within its context, while using several data sources (Baxter et al.,2008:544). It allows researchers to study complex phenomena within single settings.

I chose the disciplined interpretative case study, which is a case study approach of IPE. Case studies are one of the most common approaches to studying IPE as it is a detailed investigation of a particular event or issue (O'Brien, 2016:27). Within international political economy, qualitative methods are standard as they contribute to theory-building. For this research, a single case study strategy is used because as it allows for exploration of the case while considering the influence of several actors that are situated within the same framework. It enabled analyzing of the sources from within each actors' perspective individually.

Single case study is an umbrella of qualitative case studies that covers the disciplined interpretative case studies, hypothesis-generating case studies, the least-likely/most likely case study, and deviant case studies (Odell, 2001:161). In IPE the primary objective of case studies is to develop and critique different theories that cover most subjects studied by a political economist. From imperial expansion, interdependence and war, world depressions, trade wars, and policy decisions (*ibid*). But a case study does not need to be limited to reporting facts, it needs to have a deep understanding of the turning points of the events studied. The disciplined interpretative case study is appropriate for this research because it allows for contrasting the sources and present them from different angles while analyzing the interactions of the actors involved. As the research for this thesis is based on secondary sources, what follows is a description of the reviewing process of the relevant sources used to gain a broader understanding of the subject of investigation.

4.2 Research design

The goal of this research, is to investigate the integration of the Brazilian soybean sector and the Chinese pork sector, creating the soybean-meat complex. In order to determine how the actors involved are restructuring global trade flows, the purpose was to interpret understandings of

reality that drive their common interests. In the previous chapter, complex interdependence, as coined by Robert O. Keohane and Joseph S. Nye (1977) was presented to analyze the Sino-Brazilian interdependence. The theory of Dependence, as interpreted by Theotonio Dos Santos (1970) was also presented as to have a point of reference to compare and contrast why complex interdependence was chosen for the research. The research process to determine the terms and conditions of the interdependence intensification was divided in three parts. The first, identified the conditions leading to the increasing Chinese demand as well as the terms under which Brazil increased its production of soy. The second part focused on the sources of power China and Brazil manipulate, and how the asymmetries emerging are used in order to maximize their gains. The third part analyzed regimes and the increasing influence transnational corporations are able to exercise over the consolidation of the soybean-meat complex. For data collection purposes, the first two parts were combined, thus, dividing the research into two categories of source collection.

The source collection for this research is based on secondary relevant sources. Such as public official reports, government documents, academic journals, articles, books, edited chapters on books, other case studies, and institution records. The design of a research project details the plan for how the study will be conducted by providing a framework in which to analyze the collected data (Berg and Lune 2014:41). It is difficult to understand with absolute certitude the actions of actors within the international system, as different meanings must be sorted, and interpretations need to be considered. For this research it was challenging to select from the different sources regarding the terms under which China entered the Sino-Brazilian relationship. The reason was understanding the inner workings of the Chinese government. The structure of the Chinese government is complex. The central government is divided in several branches, each preceding over different government functions. The information available by the Chinese central government did not align with the information available on the topic from other government branches. Resulting in a gathering of Chinese experts that contradict and disagree with one another on the same terms, conditions, and development strategies used by the Chinese state regarding the soybean trade.

Trying to understand the different interpretations of the same topic led to a process of sorting sources in order to create common themes, patterns and links that enabled a cohesive framework

to work with. By using sources from different geographies, I was able to compare and contrast the information collected as they formed different narratives. The more neutral sources helped me piece together a cohesive framework, allowing for narrative clarification. As the research is based on secondary information, these sources presents advantages and challenges.

4.3 Reliability

The challenges of using secondary sources include the absence of an insider's perspective of a situation. The lack of first-hand understanding of settings or people may hinder the interpretation of events or context (Bryman, 2016:594). This creates unfamiliarity with the data. This research entails states, economic growth, political situations, and international trade. It would be challenging to interpret events, context or circumstances with complete accuracy. As it is challenging to verify the validity of the research using other research methods. The advantage of self-collection of data is understanding the structure and contours of the data (Bryman, 2016:313). The lack of an inside perspective could also limit the ability to examine isolated elements of the factors affecting the outcome of the study.

For the purpose of this research the use of the case study approach helps the description of events, individuals, policy decision-making processes, and institutions' behavior that explain the actions taken within an international political economy context (O'Brien, 2016:27). However, since we cannot be certain if the case is the general trend or the rule, the case may not be applicable to other studies. It would not be accurate to predict or assume the outcomes of social settings because they are constantly evolving, and circumstances conducive to events may change.

Since most events are consistent with more than one interpretation, one general risk of the disciplined interpretative case study is the selective construction of the facts to support a favored theory (Odell,2001:164). To avoid this risk, a presentation of an alternative theory is recommended. For this research the theory of Dependence, as well as the extractivist economic model deriving from neoliberal ideologies, are presented in order to interpret economic interdependence from other perspectives.

This research entails the emerging production and consumption centers of soybean in Brazil and China, that are reconfiguring the trade flows and the role of transnational corporations in that process. The analysis highlights the emergence of transnational actors and the rise of international regimes and institutions responsible for the changes in the relationships between states, making their relationship more complex. This complexity directs attention to issues of asymmetry and who holds power in the relationship. The concepts of vulnerability and sensitivity are introduced to be able to assess such relations of power. The data collected in this research is secondary. Because the data is secondary, this research in no way tries to interpret the findings conclusive -as it lacks an internal perspective of the situation. Following, I present the main findings, revealing potential new international trade structures emerging from the soybean-meat complex.

5. Analysis

The chapter is divided in four subsections. Section one presents transnational corporations and how they became legitimized as influential actors within the soybean industry. It also details the strong link connecting transnational actors to institutions highlighting the degree of influence these companies have over states, exercised through institutions. The asymmetries within relationships is explained to demonstrate how actors use power as resources to affect bargaining and policy decision-making processes. The second section presents the meatification of China, in terms of the implications it has had on the relationship with Brazil, detailing the challenges and opportunities of their complex interdependence. The extent of the vulnerability and sensitivity of Brazil and China are analyzed in relation to influence, and power resources distribution. The third subsection presents the emerging south-south trade flows and the dynamics of power that play a part in the restructuring shifts within the soy industry. With the emergence of new power relations, the apparent formation of a new trade regime seems to have developed. This section details the level of influence Brazil and China have acquired within institutions. However, transnational corporations are presented as embedded within the new dynamics of international trade institution. Thus, making these corporate regimes have power over outcomes. This power over outcomes is exercised through policy and measured through economic power.

5.1 The role of transnational corporations in the soybean industry

When speaking of trade relations, usually what is mentioned is the countries involved in trade, however, it is actually companies who make it possible. The primary economic actors in global trade in this sense, should be transnational corporations. They negotiate with rapidly changing political landscapes to match the reaches of supply chains stretched across large geographical spaces (Peine, 2013:195). Transitional corporations are defined as firms that engage in direct investments in several countries, and through these investments gain control of income generating assets that in turn, incorporate the companies in international production (Nicula, 2015:280). These companies can influence the market economy of states by stimulating flows of investments. The characteristics that describe these companies relate to size, as it is what defines the scope of their operations, structure, and organization. But the main characteristic is their relation to the world economy, because of the essential role they play within the development of the world economy today.

The size and nature of these companies allows them to interact with governments of the states they negotiate with. These interactions often lead the companies to heavily invest in the states' economic sector, where the negotiations usually favor the companies and not the host state (Nicula,2015:280). This raises questions about whether corporate power enables them to effectively influence the politics of states. And if we are to assume this is the case, who controls the power these companies might have over states? Furthermore, under what terms would states enter negotiations that might limit their autonomy? Complex interdependence proposes that actors who are willing to enter such relationships do so by contrasting the costs and benefits deriving from such relations. However, since it is not possible to know beforehand if the benefits will exceed the costs, it will depend on both the values of the actors involved and the nature of the relationship to determine the costs. Since defining a relationship as interdependent doesn't guarantee who will benefit more from the relationship, it is the power resources that will determine an actor's position within set relationship.

The degree of power and influence TNC's have is cloaked in a free market ideology, since it is through the market liberalization that these companies have gained considerable power in the

international system. The support of free markets advances their gain-maximizing initiatives, while shielding them from legal liability. Through this concentration of power, TNC's are able to influence international political and economic policies (Nicula, 2015:291). The degree of influence in political issues is promoted by the corporate agenda, which has advanced the belief that TNC's are necessary for economic growth. In the Chinese case, the economic growth that propelled the Chinese re-mergence into the world economy was due in part to TNC's and their foreign investments in the agriculture sector. More specifically, the investments on agroindustrial commodities such as soybeans cemented the Chinese relationship to these companies. Though the origins of this relation has its roots in the North.

In the post-Cold War period, during the 1990's the US controlled half of the world's soybean production, and approximately 51 percent of the global soy industry (Oliveira,2016:168). Transnational corporations were the dominant actors in international soybean trade. Four of these stand out: ADM, Bunge, Cargill and Louis Dreyfus. These are collectively known as the ABCD's. The companies were able to establish a virtual global monopoly because they were vertically integrated into the processing of soy. Vertical integration¹ means they were involved from the moments farmers harvested soy, to the storage, to transportation logistics from the US to South America, to port terminals (Oliveira et al.,2016:170). This verticalization acts as a pocket that creates the sources of power for these companies. The economic features of the post-Cold War period were the rapid expanding and non-discriminatory trade, large scale and rapid movements of funds from one center to another -under fixed exchange rates, and the rapid growth of TNC's (Keohane and Nye, 2012:33). These features enabled the increasing control over the soybean production chain, and also affected the price setting mechanisms within markets. Which in turn increased profit margins, reduced production and transactions costs, and allowed them to engage in future market hedging (*ibid*). But most important of all, for this discussion, the verticalization resulted in synergies of the different sectors of the soybean production and processing. Synergies² often involve the interaction or cooperation of two or more companies that combine their resources with the purpose of gaining more power together than they would separately.

¹ Verticalization: When a company control more than one stage of the supply chain.

² Synergy: is the concept that the value and performance of two companies combined will be greater than the sum of their separate individual parts.

The ABCD's North Atlantic agroindustrial business systematically gained control of the entire soybean complex. From soybean farms in the US, to the cerrados of Brazil, all operated in the same manner, employed the same technologies, and eventually started purchasing and selling soy to the same markets controlled by these few companies (Oliveira, 2016:357). Congruently, in a broader process, neoliberal reforms were taking place worldwide, which enabled these companies to transcend national borders and establish their own 'soybean republic' across South America (Oliveira et al.,2016:171). As the South American region became the largest soybean producer in the world, these companies took advantage of the crisis in the Chinese domestic soybean processing industry and made large scale acquisitions. The companies invested heavily on the domestic Chinese soybean market and at one point owned 80 percent of the Chinese soybean industry.

The measures taken by the companies to ensure their participation in every step of the production chain indicates their wish to maximize gains. This move also indicated the degree of power these companies had over the international food trade regime at the time. But it also served to reflect the political ties to US state interest and the neoliberal agenda. The regulatory structuring of the post-Cold War international food regime, served to further concentrate the power and profit in the hands of these transnational corporations (Oliveira et al.,2016:171). This expansion concretized their dominance over the international food trade regime, and thus, legitimized them as corporate actors.

Whether and to what extent a corporate regime comes to dominate the international food system will depend on its political sustainability (McMichael, 2000:22). The international trade of soy is presented as a transaction conducted between importers, exporters, producers, and consumers. This narrative describes conflicting national interest. The reality is, that this small handful of TNC's exploits the competitiveness of the US and Brazil producers (Peine, 2013:10). For example, while investing strategically in the Chinese industry, their intent was to maximize gains through a profitable supply chain. The reason to maximize gains, is that actors engaged in an interdependent relationship will always try to maximize gains, even in situations where both actors are expected to benefit. The reason to for competition stems from the fact that gain maximization measures do not guarantee distribution of resources.

Complex interdependence proposes two measurements of the costs and benefits of an interdependence relationship. If we were to frame the relationship between the TNC's and states in terms of costs and benefits of transactions, the measuring of the costs and benefits is often related to why the actors engage in trade. The standard answer is 'comparative advantage' which is related to joint gains and joint losses. Under an interdependent relationship the principle of comparative advantage -as coined by Ricardo (1817), seems to neglect to mention how the gains will be divided, and therefore renders the concept futile in this situation. Evidently these companies are not seeking mutual gains through vertical integration. The exploitation of US and Brazil's competitiveness is congruent with the second measurement proposed by complex interdependence, where the costs and benefits are determined by relative gains and distribution. Which argues that actor will engage in competition even when gains are expected for both actors in the relationship, as gains are not free from distribution conflicts (Keohane and Nye, 2012:8). Therefore, their aim is to maximize their share of gains.

Adding a degree of complexity to the relationship between TNC's and states, are institutions. Institutions serve as the regulatory environment in which both actors interact. After the Cold War, the TNC's became major pillars of a corporate food regime that shared narrow links between US interests and the post war regulatory mechanism that was structuring the post-war international food and agriculture regime (Oliveira et al.,2016:171). This in turn concentrated the power and gains in the hands of the US-based transnational agrobusiness corporations. From the expansion of the soybean complex created by these companies, came conflicting views regarding their dominance within the international food and agriculture regime. Consequently, leading to the emergence of new actors that restructured of the soybean-meat complex. The restructuring causes, and conditions is discussed in the next section as is connected to each actor individually.

The degree of influence TNC's have on an international scale is related to the concept of globalization. In this sense, the dominance of the corporate regime over the international food and agriculture system will be determined by its political sustainability. By describing globalization in political terms in relation to the international food and agricultural system, set system becomes susceptible to modifications from the natural constraints of this environment (McMichael, 2000:22). The WTO, was the instrument of reform of the international trade system in food stuff during the 1990's. The result of this reform integrated the world food production

and consumption into an international production system organized and managed by TNC's. It is the behavior of these corporations that create links between them and national economies - specially in those states with industrialized economies, that have led to the rise of this production system.

Complex interdependence defines regimes as governing arrangements that include networks of rules, norms, and procedures that regulate behavior and control its effects (Keohane & Nye, 2012:16). Corporate regimes are a set of power relations where formal rules and operating processes face continual opposition by the members of the regime itself (McMichael, 1999:22). During the 1990's the neoliberal reforms that enabled significant inflows of capital from TNC's into industrialized economies expanded their influence in institutions. The consolidation of the global soy industry reveals internal contradictions as political decision-making processes are not always clear cut. But specific international regimes have important effects on interdependent relationships (Keohane and Nye, 2012:17). For example, Brazil and China -while facing challenges from the decades long control over the soybean industry, try to bypass their grip. However, the strategic decisions the companies make, are structured by policies and market conditions that benefit them (Peine, 2013:195). Thus, enabling these companies to have power over outcomes. In the end, it seems these companies are able to exercise power in different ways -over states, and/ or institutions.

Transnational corporation are essential actors within the soybean-meat complex as they established a type of vertical integration that enables their involvement in all stages of soybean production. The control these companies had, developed during the post-Cold War, within market conditions that facilitated the expansion and consolidation of the soybean industry under these few companies. International regimes are intermediate factors between the power structure of an international system and the political and economic bargaining taking place along with it (Keohane and Nye,2012:18). The distribution of power among states greatly affects the regimes. The regime in turn affects -and in the case of the corporate regime dominates, the political bargaining as well as decision making processes that occur within the international food and agriculture system.

The relationship the TNC's have with Brazil and China, challenges the Sino-Brazilian relationship, because even though both states have great power resources, they are not always

able to exercise their power or influence. Corporate regimes act as mediators between states and institutions, but the bargaining and decision-making processes taking place between them do not always side with the interests of the states. Though there are shifts within the structure of the global soybean industry, as new power dynamics emerge, the TNC's influence still reaches too far down the production chain. What follows is a discussion of the intensification of the Sino-Brazilian interdependence where the power resources of each country is analyzed by their sensitivities and vulnerabilities to outline the contours of the soybean-meat complex.

5.2 The development of South-South trade flows

Whether there is adequate competition within the global soybean industry is a question that can generate multiple answers. Adequate competition has different implications for the different actors involved. The control that the ABCD's hold over the soybean industry, should be interpreted in the context of different political and economic conditions for both Brazil and China.

The political and economic ties holding Brazil and China together has resulted in the emergence of the South-South cooperation strategic partnership. Some say it challenges the neoliberal assumptions of the Washington Consensus³ (Jilberto and Hogeboom, 2012::39). Others characterize the partnership by its political relevance within WTO negotiations. Placing it into a broader context of increasing economic importance for Russia, India and South Africa -the rest of the BRICS nations, as their main trade partners within the institution (Hopewell, 2015:311). In the context of the WTO, the depiction of Brazil and China, is of two new powers that are challenging the traditional dominance of the US in the governance of the global economy (*ibid*). The challenge narrative stems from the great influence the US had had on the global economy through neoliberal economic restructuring, that is now being challenged by new developing countries -called rising power, that could subsequently disrupt the neoliberal dominance. Though Brazil and China share mutual interest within the global soy industry, which are pursued through their complex interdependence, each state is an influential actor within the international

³ The Washington Consensus refers to the set of policies prescribed by the IMF and the World Bank to 'encourage' development and help countries of the global South get out of debt during the 1980's. These policies follow neoliberal principals of privatization and trade liberalization.

trade system. These depictions seem to omit the fact that the ‘rise’ of these new powers, is in fact an indication of their individual economic might. Identifying the forces propelling their rise allows for better understanding of power resources and distribution within their interdependent relationship.

The forces driving the rise of Brazil and China differ for each state, as these countries have taken different paths to power. China’s re-emergence in the world economy is linked to their growing economy. Brazil’s rise is connected to their cooperation and leadership for developing countries coalitions that created the G20, enabling Brazil to exercise influence above its economic weight (Hopewell, 2015:311). The current international economic landscape was created under the American hegemony period of post-World War II, and therefore is shaped in great part by US power (Gilpin, 1987:11). The institutions created to govern the world economy at the time, such as the WTO, the International Monetary Fund (IMF) and the World Bank, were consequently heavily influenced by the US and other advanced and industrialized states. The result was the exclusion of developing countries from global economic decision-making processes inside these institutions. The WTO is a core multilateral economic institution, responsible for setting and enforcing the rules of the international trade system. It has also been scenario for struggle over global power relations. Is one of the first institutions to experience a shift in power away from the US, and the rise of new developing country power (Hopewell, 2013:604). It is the institution tying Brazilian and Chinese mutual interests through international commodity trade.

As the dynamics of the global economy seem be transforming Brazil and China into increasingly important actors. The global relevance of these states is evident across different institutions. Of particular interests for this discussion, is the WTO, where Brazil and China have apparently entered the ‘inner circle’ of power and emerged as important actors of trade negotiations.

Most of China’s power stems from the fact that the Chinese economy has quadrupled since the reform period that started in 1978 (Huang, 1999:20). China is portrayed as the rising new power that will challenge the US, based on its large economy, rapid growth rates, its major role in world trade, and considerable economic power (Hopewell, 2015:313). Brazil, however, is pictured as a secondary power having fewer capabilities than China. Brazil’s economy amounts to a small fraction of the Chinese, specifically GDP 2.4 trillion, compared to China’s 8.3 trillion (*ibid*). Likewise, while China represents 10 percent of global trade, Brazil accounts for 1 percent.

Brazil's activism in the WTO, has been attributed for leading developing countries into the G20, and for bringing an end to the dominance of the US through targeting US policies in bargaining and decision-making processes (*ibid*). This may well be the case, but Brazil exhibits behavior that rather than challenge the neoliberal agenda in the WTO, promotes free market globalization, and supports the expansion and further liberalization of the world economy.

The force driving Brazilian interests is an export-oriented agroindustrial agenda, with soybean as its main export. Since Brazil and China are both increasingly influential members of the WTO this may indicate that the real challenge here is not the restructuring of the WTO being caused by the power relations of Brazil and China. The challenge brought by Brazil and China seems be rooted in the power generating resources of the neoliberal discourse. From the complex interdependence lens, the asymmetrical manipulation of power these companies are able to exercise, may have driven Brazil and China to seek alternatives in order to be less sensitive to the terms and conditions these companies operate under. For example, the first dimension of power -sensitivity, is measured by how the resulting cost of changes in transactions on states or governments, sensitivity develops through the interactions of actors within a policy framework. However, sensitivity assumes that the sets of policies within a framework remains unchanged (Keohane and Nye, 2012:11). Since the set of policies remains unchanged, this means Brazil and China seem to be using the tools created by the US and the US-based transnational corporations (policies, investment strategies, mergers and acquisitions, etc.), to their advantage and thus, advancing their South-South agenda. But it also shows their intent to circumvent the terms and conditions given. The second dimension of power is vulnerability. Vulnerability details the availability and costs of alternatives actors are faced with (*ibid*). By seeking other alternatives to change the framework they are faced with, Brazil and China would become less vulnerable to the changes of set framework.

The WTO is acting as the institution through which these shifts are taking place. Institutions are neither so powerful nor so autonomous, and yet, relationships of interdependence occur within - and therefore may be affected by networks, rules, norms and procedures, that regulate the behavior and control its effects (Keohane and Nye,2012:16). Complex interdependence defines regimes as the set of government arrangements affecting interdependent relationships. The behavior of Brazil and China is congruent with power maximizing strategies that are defying the

power distribution set by the US and the ABCD's. International regimes are intermediate factors between the power structure of an international system and the political and economic bargaining that takes place with it (*ibid*). To better illustrate this argument, the actors and the reasons leading up to this Sino-Brazilian strategy need to be explained. Starting with the extent of power these companies held at one point over global the soybean industry.

The increasing soy production and processing in South America during the 1990's took place alongside the expansion and consolidation of the soybean industry in the hands of the ABCD's. Through neoliberal reforms enabling flows of transnational capital into Brazil, these companies made mergers and acquisitions with small and medium size soybean processing companies. They expanded the production capacity of the processing plants and constructed new facilities in ports to ensure global connection of operations which provided strategic market advantages (Oliveira et al.,2016:172). Consequently, the ABCD's gained control over 50 percent of the global soybean crushing⁴ capacity.

The three tenets of complex interdependence are multiple channels of communication, an absence of hierarchy in issues, and a reduced role of force for policy purposes. Multiples channels of communication are one of the conditions under which different actors can develop an interdependent relationship, enabling communication in both formal and informal relations between governmental elites and formal office arrangements (Keohane and Nye, 2012:19). But also, non-governmental elites and transnational organizations. It is precisely these channels of communication that allowed the ABCD's to gain such influence over the soybean sector globally. In this sense, the neoliberal reforms that took over the international trade system during 1990's helped the expansion of the ABCD's by enabling these companies to cast a wider net over the soybean global markets, thus, having influence over both economic resources and the political processes.

Though the ABCD's expanded their acquisitions and merges, they hit a period of inactivity where their market shares became stagnated at around 50 percent of total crush capacity (Oliveira et al.,2016:172). The stagnation was due to the emergence of new large-scale actors from within the South American region, specifically from the agricultural business sector. In

⁴ Soybean crushing refers to turning soybeans into meal and soybean oil through a process known as crushing.

Brazil, these new actors own significant shares of the crushing industry. The reason was the Brazilian government, which removed heavy export taxes on unprocessed commodities in order to make its exports of unprocessed soybeans more competitive in international markets. As a result, domestic soybean crushing fell from 95 percent of total production in 1995, to less than 50 percent today (*ibid*). Only 25 percent of Brazilian soy remains in Brazil, where is repurposed for domestic use. The great majority is exported as unprocessed soybeans to major processing and consumption regions, mainly in East Asia.

In the Chinese case the effects of these companies over the soybean sector were different. During the 1990's due to the reform period, China changed the tax and tariffs structure for soybeans to promote whole bean imports. The Chinese government also started promoting foreign investments through fiscal incentives in the soybean crushing industry on the main Chinese ports. The concurrent results of these two processes cemented the interdependence of Brazil and China, and the emergence of new trade flows. For Brazil, the results included a geographic redirection in whole-bean exports, from Europe -which had received the majority of Brazilian soybean exports until 2004, to China. This was a drastic change reflecting the rapid changes in the soybean market. In 2003, 54 percent of Brazilian whole soybean exports still went to Europe, with only 30 percent going to China (Oliveira et al.,2016:172). By 2013 the European share of those exports had dropped significantly to only 12 percent, while China became the destination of a formidable 75 percent. This redirection laid the groundwork of the restructuring of the soybean processing industry where Brazil and China now produce 54 percent and crush 61 percent of all soybeans in the world(*ibid*). Thus, intensifying their interdependence through mutual interests.

As the Sino-Brazilian interdependence intensifies with the redirection of the soybean industry to the South, the level of involvement of the ABCD's had decreased. The redirecting of the soybean industry, resulted in US figures dropping significantly, with the soybean processing shares mounting to only to 19 percent of global production. Therefore, it can be said that the global soybean industry has a new landscape that is no longer anchored in the United States. Though the ABCD's retain a significant share of global crush and trade, they now compete against a much larger flows of soybeans from larger-scale Brazilian producers. The strategic advantage of Brazil and China is that those large-scale Brazilian producers, export soybean to be directly

crushed in China by Chinese companies. China's state-owned agroindustrial business corporations, specially, have tried since 2007 to regain control of the soybean crushing industry from the ABCD's control (Oliveira, 2016:173).

The asymmetrical power these companies have over the global supply of soybean -though on a lesser degree, continues to hold a monopoly of the soybean market. The constant negotiations between the ABCD's, governments, producers, and consumers of soy, highlights the polemics in the global soybean landscape. (Peine,2013:196). Even though there are new actors emerging from South America and East Asia, the ABCD's established themselves and continue to sustain their market shares through vertical integration. The ABCD's continue use the same strategy employed in the 1990's post-Cold War period, but it is now used on a global scale in order to compete against the new actors. From purchasing, processing, and trading operations, and thus, controlling exponential volumes of the global soybean trade (Oliveira et al.,2016:173). This in turn enables them to continue to have advantages when resourcing from, and redirecting sales to, multiple markets around the world. In light of the continuation of the monopoly, companies from China, Japan, Singapore, South Korea, Argentina and Brazil have increasingly begin to challenge their dominance over the international agricultural trade (Clapp, 2016:8; Wilkinson, 2016:19).

Adding another layer on complexity to these power struggles, are China and Brazil's lack of infrastructure to crush and process soy, across both ends of the international trade. Therefore, the ABCD's have started to engage in bigger mergers and acquisitions in order to transform their commercial relationship with these countries, into new forms of international trading operations (Oliveira et al.,2016:173). In order to retain control by all means possible, the companies have adopted new business models. Rather than relying upon vertical integration within a single company, these companies are now recurring to new strategies to stablish strategic partnerships. Through shared advantaged information about the access to production and processing markets in Brazil and China. The 'asset-light' strategy, refers to a business model used by companies where the companies have fewer capital assets compared to its operations (*ibid*). Because the ABCD's power was decreasing, by concentrating their investments in the areas generating the most return from investments, this strategy ensured the access to the production and processing markets in Brazil and China.

For Brazil, the challenges posed by the ABCD's include their involvement in every stage of soybean production. For China, the implications of the monopoly are strategic and economic. For Chinese processors, feed companies, and pork consumer, soybeans coming from Brazil are cheaper than domestically grown soy (Peine, 2013:196). Therefore, they need transnational soy traders. However, the growing dependence on imports in China, draws attention to the overwhelming emphasis the Chinese state gives to the self-sufficiency policy. As foreign interests continue to consolidate control further down the Chinese supply chain, the loss of sovereignty over the supply chain becomes increasingly problematic. The growing dependence on Brazilian soy and the Chinese implications may have driven Brazil and China to promote their South-South agenda within the WTO.

Adequate competition in the soybean industry, appears to have no simple answer since there is no single path to the processing and producing of agroindustrial commodities like soybeans. Power resources are used to form strategic alliances by the actors in this interdependence. Ones like the ABCD's seek to exercise their power by any means necessary and recur to multiple ways to do so. From vertical integration to more recent strategies like asset-light to use advantaged information in order to access processing markets in Brazil and China. These actions further prove how complex the interdependence is. Under conditions of interdependence actors risk to lose autonomy, as cooperation reduces autonomy (Keohane and Nye, 2012:8). However, these actors chose to interact with each other as the benefits of their relationship exceeds the costs for now. Which is why the question of whether there is adequate competition in the global soybean industry is difficult to answer. And the answer would be different depending who you ask. However, there does not seem to be one specific and determined strategy enabling the transition of the global soy industry from North to South, since under different political or economic frameworks, the terms and conditions of the soybean trajectory would be conditioned to the different context of the actors involved.

From the trajectories of soy in Brazil and China, it is evident that both countries equally benefit from the soybean transaction. Though in different respects. For Brazil, the pressure to produce soybean in large-scale capacities, draws attention to the level of power the TNC's have within the country, as they finance Brazilian soy production. Though the emergence of Brazilian

domestic soybean processing companies levels the plain field, the TNC's continue to hold great influence over the outcomes of the production of soy.

The recurrent pattern here is the high degree of interdependence of Brazil and China within nationally interdependent agricultural markets. From the perspective of TNC's, the two markets forming this commodity complex serves to maximize their gains because the same corporations that export soybeans from Brazil, also import them to their own crushing plants in China. This soybean-meat complex operates in very different political contexts, but in economic terms the national markets are not separate and interacting independently (Peine, 2013:200). It appears as though the Sino-Brazilian relationship is not as asymmetrical and beneficial towards China. It is mutually beneficial to both countries, but in different aspects. The markets are acting as successive stages of the global production chain that is still largely organized and operated by transnational corporations.

6. Conclusion

This thesis set out to investigate what characterizes the complex interdependence that has evolved in the soybean-meat complex. The concept of interdependence in world politics is used to characterize relationships presenting mutual effects among countries or among actors in different countries (Keohane and Nye, 2012:9). These effects are the result of international transactions across international borders. The effects of the Sino-Brazilian relationship resulted in a complex interdependence based on the integration of the Chinese pork sector and the Brazilian soybean sector. What intensifies the complex relationship is the Chinese demand for soybeans.

What characterizes the evolvement of the complex interdependence in the soybean-meat complex is the interactions and power relations of the actors involved within international trade. The soybean-meat complex includes the participation of Brazil, China, transnational corporations, and institutions. Traditional understanding of world politics dictate that states are the main actors within world politics. States are indeed powerful actors capable of exercising power through their economic and political resources. However, power measured in terms of resources, may look different than power measured in terms of influence over outcomes (Keohane and Nye, 2012:16). In this logic, transnational corporations should be understood as

the main actors within the soybean-meat complex because their influence goes beyond economic resources, as they are able to influence political procedures, and to some extent outcomes as well.

Whether and to what extent a corporate regime comes to dominate the international food system will depend on its political sustainability (McMichael, 2000:22). Their political influence upon institutions enables transnational corporations to have power over decision-making processes that affect the behavior of actors. The measures taken by the companies to ensure their participation in every step of the soybean global production chain indicates their wish to maximize gains by all means necessary. This include vertical integration within the soybean production and processing chain, the asset light strategy used to generate the most return from investments, and the retention of raw materials through contracts, mergers, storage and transportation (Oliveira et al.,2016:175). Indicating the length this companies are willing to go in order to achieve their goals.

An exclusive focus on economic capabilities of states would be unable to explain the power struggles within the WTO. In contrast to expectations of the imminent shift in power from US to China, it was actually Brazil the first developing country that challenged US interests, and as such emerged as a significant actor within the WTO (Hopewell, 2015:314). Rising powers have different sources of power that they are able to exercise it differently. As a result, they exercise different sources of influence. International interdependence tends to limit the abilities of states to manipulate asymmetrical interdependence (Keohane and Nye,2012:16). This may indicate that the ‘small’ state (in this case Brazil), may have greater domestic political unity than the large one. So, even though the more powerful state may appear to be less dependent, it may be more fragmented internally. Even with high levels of asymmetries causing conflict of interests, the Sino-Brazilian interdependence managed to reduce -though not completely, the US influence over the soybean market.

Complex interdependence draws attention to issues of asymmetry in an interdependent relationship regarding power distribution and who holds the most power in the relationship (Keohane and Nye, 2012:9). To assess such relations of power, the concepts of vulnerability and sensitivity were introduced. China appears to be the dominant state presenting less vulnerability to changes in the soybean-meat complex framework. This is based on China’s economic

resources, the size of the Chinese economy and the position as global importer and importer (Hopewell, 2015:314). Brazil appears to be sensitive to the policy changes within the soybean-meat complex because of the influence China has on the Brazilian agricultural market. However, upon closer examination Brazil and China are equally interdependent with one another. In the Chinese case, what characterizes the interdependence is China's long prioritization of food self-sufficiency. Because of this policy priority, the industrialization of pork production -through the importing of soybeans is becoming an increasingly important aspect of China's food security (Peine, 2013:206). Since Brazil has an export-oriented agenda, being able to supply the demand is their main goal, which is why Brazil promotes the liberalization of markets (Hopewell, 2013: 604). The soybean-meat complex has evolved, and the picture that emerges is one of high level of interdependence formed by interdependent national agricultural markets. The Brazilian and Chinese markets appear to be integrating into a commodity complex, since the same transnational corporations that export soybean from Brazil also import them to the same crushing plants in China. The soybean-meat complex seems to also be operating across different political and economic context. From an economic perspective the national markets of Brazil and China are not separate, but instead are interacting with one another in successive stages of production along the global soybean assembly line (Peine, 2013:200). Though this assembly line is still largely operated by transnational corporations.

The case of the Sino-Brazilian and the evolvement of the soybean-meat complex highlights the participation of different actors, regimes and institutions. Drawing attention to issues of competition with the global soybean sector. Whether there is adequate competition is directly related to the implications emerging from trade flow patterns in South, and the political alliances formed. The competitiveness of the sector is dependent on the conditions of the different actors. Whether the involvement of new powers like China and Brazilian in the global soybean industry will generate different market opportunities that might relief the dominance of transnational corporations, remains to be seen. But it is clear that Brazil and China are interested in the possibilities offered by the implementation of strategies and policies that decrease transnational corporations' influence. Because of the size and market dominance of transnational corporations they are able to control the market economies of states. As long as policy and production systems drive and mutually reinforce one another, the level of competition in the soybean industry is unlikely to improve.

6.1 Reference List

Notes:

1. For more information about verticalization integration <https://www.investopedia.com/>
2. For more information about synergies visit <https://www.investopedia.com/>
3. The term Washington Consensus. This definition was used in reference to the article by Peine, E. (2013). Trading on Pork and Beans: Agribusiness and the Construction of the Brazil China-Soy-Pork Commodity Complex. In H. James Jr., The Ethics and Economics of Agrifood Competition (20th ed., pp. 194-210). Columbia, MO.: Springer.
4. Soybean crushing refers to turning soybeans into meal and soybean oil through a process known as crushing. <https://www.soyatech.com/>

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