Between dependency and cooperation: What China's activities in Brazil's energy sector tell us about the new international economic centre.

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Abstract

After 2010, there was a spike in China-Brazil (and Latin America) economic relations. The level of trade and investment coming from the Asian country reached unseen levels. Although the two groups of scholars analyzing this new phenomenon – dependency and south-south cooperation – provided a substantial understanding about it, they left some unanswered gaps. The two main gaps this work engages with are: 1) the lack of understanding about the role state-owned enterprises play in creating dependency or cooperation; 2) the lack of a specific analysis about investments in infrastructure, particularly in energy. To cover these gaps, this work provides an analysis of China Three Gorges and State Grid (two Chinese state-owned enterprises) in Brazil's energy sector, which revealed the possibility of dependency and cooperation to coexist.

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Chapter 1: Introduction

After 2010, there was an increase in China's economic relations with Brazil, and more broadly, Latin America (China-Brazil Business Council, 2013, 10; Economic Commission for Latin America and the Caribbean, 2014, 13), which turned scholars' attention to this new phenomenon. While some researchers concerned with the global south's development were optimistic about this increase in economic relations and treated it as an alternative development road to Brazil and Latin-American countries (DeHart, 2012; Gosovic, 2016; Gray, Gills, 2016; Harris, Arias, 2016), some others were skeptical and concerned that this relationship would reproduce old metropolis-satellite patterns (da Rocha and Bielschowsky, 2018; Wise and Veltmeyer, 2018; Giraudo, 2019), previously adopted by Europe and the United States with the region.

The first group, known as south-south cooperation (SSC) scholars, tend to classify China's integration internationally as peaceful and as an alternative means to the United States and the Bretton Woods institutions for developing countries to achieve higher economic and social results (Abdenur, Da Fonseca, 2013; Abdenur, 2014; DeHart, 2012; Gosovic, 2016; Gray, Gills, 2016; Harris, Arias, 2016; Mawdsley, 2019; Quadir, 2013; To, Acuña, 2018; Vadell, 2018; Lengyel, Malacalza, 2011). In other words, they argue that China-Brazil's relationship is mutually beneficial, a win-win relation.

The second group looks at China's connection to Brazil and Latin America through the dependency theory lens. They argue that China is creating old dominance patterns between metropole and periphery (Casanova, Xia, and Ferreira, 2016; Bebbington, Verdum and Gamboa, 2018; da Rocha and Bielschowsky, 2018; Wise and Veltmeyer, 2018; Giraudo, 2019). The dependency theory explains a division between "core" and "periphery" in international society. The former benefits by creating economic and political mechanisms through trade and foreign direct investment to

subordinate the latter's development. In other words, countries in the periphery have to consider their development options limited to the economic expansion of countries in the core (Dos Santos, 1970; Cardoso, 1972; Kaufman, Chernotsky, Geller, 1975; Biersteker, 1993; Blaney, 1996; Cardoso, 2009; Higginbottom, 2013; Casanova, Xia, Ferreira, 2016; Castañeda 2017; Mason, 2017; Wise, Veltmeyer, 2018; da Rocha, Bielschowsky, 2018; Giraudo, 2019; Kvangraven, 2020; Stallings, 2020). Also, a key factor for dependency relations is the presence of local groups that act on foreign capital interest as they benefit from it (Cardoso, 1970).

Nevertheless, studies analyzing China's integration with Latin America are still limited. Most fail to address significant local and external factors such as the role of local groups in satellite countries and the role of foreign state-owned enterprises and state-owned development banks. This project seeks to engage with one of these gaps – the role of foreign state-owned enterprises - to build a more concrete understanding of how China's engagement with satellite economies is possibly reproducing dependency relations.

The analysis presented here will focus on two companies: State Grid and China Three Gorges. In addition to being state-owned enterprises, these companies were responsible for China's highest investment level between 2010 and 2018 in Brazil. These companies' analysis will also throw light on a sector overlooked by dependency scholars, the infrastructure sector (particularly, energy) and on the role of specific companies in articulating dependency. As such, the question this project wants to answer has an explorative character. Is China reproducing dependency patterns in its integration with Brazil? If yes, does the analysis of specific companies provide insights on the characteristics of what dependency upon China looks like?

As formerly discussed by dependency scholars, the hypothesis tested here is that China is seeking new markets for its companies due to its internal economic slowdown and to getting access to their

commodities of interest. In doing so, China creates conditions in which dependency characteristics are more present than those suggested by south-south cooperation studies. In other words, we expect to find more evidence that China is closer to constraining Brazil's economic development than assisting the country to sustain its economic growth autonomously. At the same time, China's integration with Brazil (and with most countries) has some unique features, the main ones being that the representatives of China's integration are state-owned enterprises[1]; China invests using a "state-strategy" rather than an "individual company strategy"; the country makes long-term investments; and the country introduces some technological innovation into the recipient country. These characteristics combined allow for a kind of dependency where at least some level of cooperation is present.

This thesis focuses on the operations of State Grid and China Three Gorges because they are the second-largest energy producer and distributor in Brazil. They are involved in at least 26 projects in this sector (China-Brazil Business Council, 2013; China-Brazil Business Council, 2014; China-Brazil Business Council, 2016; China-Brazil Business Council, 2017; China-Brazil Business Council; China-Brazil Business Council, 2019). Additionally, the energy sector is where China invested the vast majority of its capital in Brazil.

The focus on the energy sector also allows us to expand the boundaries of dependency studies. Whereas most dependency studies examine the trade of commodities (from the satellite countries) and industrial goods (from the metropolis) and investments from the metropolis in the primary sector of the satellites, they do not pay much attention to investments in infrastructure projects, such as the energy sector. By choosing this sector, the project adds another layer of analysis to

[1] Which is different from the kind of dependency reported by scholars looking at the United States or Europe as central countries when the incidence of private capital is much higher.

how dependency may operate with a metropolis directly controlling a significant share of a vital industry (energy) for any country.

The focus this work places on Brazil as a target of China's investments in Latin America relies on the fact that the South-American country is the principal recipient of Chinese capital in Latin America and has strong economic ties with the Asian country (Economic Commission for Latin America and the Caribbean, 2013, 23; China-Brazil Business Council, 2019, 8). China invested in Brazil an estimated amount of US$13,100 million in 2010. For comparative purposes, between 2007 and 2009, Chinese investment was no higher than US$ 600 million (China-Brazil Business Council, 2013, 34). With ups and downs throughout the years, between 2007 and 2018, the total sum of Chinese investments in Brazil reached US$ 102,500 million (China-Brazil Business Council, 2019, 08). China invested its capital in a vast range of economic sectors, and it is possible to notice a change of priorities through the years. It started with modest projects in the commodities sectors, then it moved to the industrial area and passed through the creation of Chinese banks' branches. Finally, it focused on infrastructure, agribusiness, and extractive industry (China-Brazil Business Council, 2019, 09).

Chinese investment is diverse, not only in its economic sector destination but also in its nature. Both state-owned enterprises and private firms were interested in Brazil. Although the number of projects led by private companies is higher, state-owned enterprises' invested much more capital (China-Brazil Business Council, 2019, 09). All this new interest of China in Brazil made the South-American country receive the highest investment in Latin America, nearly 50% of the total (China-Brazil Business Council, 2019, 09).

The challenge associated with analyzing China and Brazil relies on the fact that the financial data available is not precise. While the Economic Commission for Latin America (ECLA) under the

United Nations estimated that the entirely of Latin America received US$ 13,000 million of Chinese investment in 2010 (Economic Commission for Latin America and the Caribbean, 2013, 13), the China-Brazil Business Council (CBBC) identified that only in Brazil, investments reached US$ 13,100 million in the same year (China-Brazil Business Council, 2013, 10).

Although China claims to have improved its governance and transparency mechanisms throughout the years, the information is still blurred when analyzing its foreign capital activity. The main reason is that it does not present the final investment destination in their official data but the intermediate destination before it arrives in Brazil and other countries. Knowing that it is not a surprise that China directs most of its investments to offshore tax havens on their official reports. On the other hand, Brazil does not register the "mother country" of the investment, but only the country from which the capital came directly from (China-Brazil Business Council, 2013, 10). For that reason, whoever aims to create datasets about Chinese international financial activities has to do so based on estimations, and the methodologies differ among researchers. For example, while ECLA bases its estimates on official government reports, the China-Brazil Business Council base their data on investments broadly reported in the media. When possible, they double-check the information with representatives of China or Chinese companies (China-Brazil Business Council, 2013, 10).

To overcome the barrier created by the lack of data precision, this project will adopt two main strategies: 1) when looking at foreign direct investment, this project will contrast two different sources, the China-Brazil Business Council and the China Global Investment Tracker. This project expects to capture information that any of the sources fail to report by adopting this method. For example, although 2010 is a turning point in China's engagement with Brazil and Latin America for all the references, 2016 has a significant gap, with the China Global Investment Tracker

reporting US$ 14,080 million of Chinese investment in Brazil and the China-Brazil Business Council reporting only US$ 8,400 million. 2) When looking at the two companies this work analyses – State Grid and China Three Gorges – it will rely on the annual reports released by their Brazilian holdings whenever available.

In addition, a limitation of this project is that it will build a dependency argument without fully considering all the aspects that initial dependency scholars suggested. This is to say that it will look primarily at foreign direct investment data and Chinese companies' results in Brazil. It leaves outside of the analysis Brazil's internal struggles between groups that either support or fight against China's economic relations with Brazil (Cardoso, 1970). It also does not aim to provide a detailed analysis of trade patterns - all of which are relevant aspects of dependency.

The following chapters' organization is as follows: The second chapter will look at the two main groups of scholars that pay attention to China-Brazil's (or China-Latin America) interactions quality - the dependency theory and the south-south cooperation scholars. It will present and discuss where these two groups' work is substantial and where it leaves room for improvement. The third chapter will map most of China-Brazil's economic relations and where China invested its money in Brazil. This chapter aims to identify patterns or strategies to understand *how* or *if* China's energy investment connects to it. The fourth chapter of this project aims to detail the operation of China Three Gorges and State Grid. This project expects to identify more details about how China is operating in Brazil through its state-owned enterprises. Additionally, this project expects to be able to identify patterns closer to those proposed by dependency scholars. The fifth and last chapter will tie together everything presented in this work and discuss future research directions for this topic.

Chapter 2: Literature review

The two main theories analyzing China-Brazil relations are the south-south cooperation (SSC) and the dependency theory. Although the theoretical approach's distinction created sharp qualitative debates about the consequences of increasing Chinese investments in Brazil and Latin America, they initially emerged back in the 1960s and 1970s as complementary solutions for a perceived dominance and imperialism from powerful western nations, i.e., the United States and Europe over South- and Central- American Countries, Asia and Africa.

First, this project will present the south-south cooperation framework. It will highlight its strengths and show where it fails to assess China-Brazil relations providing biased arguments. Secondly, this project will present the dependency theory and why it is more suitable than the SSC framework to understand Brazil-China economic relations. It will also explain its gaps on which this project will focus.

2.1 South-South cooperation

South-South cooperation as an empirical event emerged back in the 1950s. It was during the Bandung Conference, in 1955, that the term "Third World" and the solidarity among its members - composed of recently decolonized and developing countries - were initially coined (Lengyel and Malacalza, 2011, 05; Gray and Gills, 2016, 557). After that, other international movements composed of developing countries emerged, such as the Non-Aligned Movement and the Group of 77 (Lengyel and Malacalza, 2011, 05). All these movements focused on discussing alternatives to the economic and political model at that time, which according to its members, could not reduce differences between developing and developed countries (Lengyel and Malacalza, 2011, 05; Harris and Arias, 2016, 517). This new emerging group claimed less interventionism from foreign

countries in their political and economic decisions (Gray and Gills, 2016, 558). One of the key achievements under the Group of 77 was the creation of the New International Economic Order (NIEO), which states could achieve through more fair trade conditions between north and south, southern countries having sovereignty over their natural resources, and nationalization of industries (Gray & Gills, 2016, 558).

According to Amanor and Chichava (2016, 02):

> SSC emerged as a framework for building technical cooperation among developing countries to facilitate self-reliant development. SSC was based on notions of increasing regional integration to ameliorate the shocks of the world crisis of the 1970s, and to counter the increasing dominance of the economies of developing countries by multinational corporations. SSC built upon a framework of third world solidarity that can be traced back to the 1955 Bandung Conference, and the Non-Aligned Movement, in which the main principles informing relations between states were based on peaceful coexistence, non-interference in domestic affairs and mutual interest.

Complementing the above definition, Gray & Gills (2016, 557) explains that,

> "South-South Cooperation (SSC) has been a key organizing concept and a set of practices in pursuit of these historical changes through a vision of mutual benefit and solidarity among the disadvantaged of the world system. It conveys the hope that development may be achieved by the poor themselves through their mutual assistance to one another, and the whole world order transformed to reflect their mutual interests vis-àvis the dominant global North."

Usually, authors consider northern countries those who are members of the Development Assistance Committee (DAC) under the Organisation for Economic Co-operation and

Development (OECD) (Abdenur and Da Fonseca, 2013, 1475-1476; Amanor and Chichava, 2016, 01; Mawdsley, 2019, 11; Quadir, 2013, 326; Lengyel & Malacalza, 2011, 06). Most studies that explore SSC focus on the differences between the conditionalities that northern and southern countries impose on the exchange for their aid and other forms of investments. The kind of conditionalities that states from the global north impose are those promoted by the Washington Consensus and the Bretton Woods institutions (DeHart, 2012, 1364; Abdenur & Da Fonseca, 2013, 1478; Abdenur, 2014, 97-98; Vadell, 2018, 13), such as "policy reforms, structural economic changes or good governance" (Quadir, 2013, 32). Amanor (2016, 01) also points out that northern aid is more focused on private interests and capital accumulation than developmental initiatives.

When analyzing China's relationship with Latin America, scholars that adopt an SSC approach (DeHart, 2012; Harris and Arias, 2016; To & Acuña, 2018; Vadell, 2018) tend to be optimistic about it. Their main argument is that due to the lack of conditionalities associated with Chinese aid and investment, this capital allows the recipient country to opt for a more autonomous development project, different from northern donors and investors.

DeHart (2012) argues that western scholars and media have elaborated terms such as "Chinese Model" or "Beijing Consensus" as a way to project internationally the form of development adopted by China internally, characterized by an authoritarian political regime and economic liberalism (DeHart, 2012, 1360). The author explains that the base of these terms is a fear of having an alternative to the Washington Consensus practices (DeHart, 2012, 1364) and that China's interaction with Latin-American countries was based on "complementary economies and a 'common understanding' of the advantages that might accrue to each party as the foundation for a new partnership" (DeHart, 2012, 1364). In a similar vein, Veddel (2018) argues that the China-Latin America relationship is interdependent rather than dependent (Veddel, 2018, 10). The author

explains that China's emergence as a key international player erodes the Washington Consensus basis, as it does not impose any particular form of development to be adopted and generate mutual gains (Veddel, 2018, 13).

Harris and Arias (2016) are less sympathetic of those who do not hold a complimentary view of China in Latin America. They argue that these scholars are biased and under the influence of "preconceptions, hidden agendas and fears" (Harris and Arias, 2016, 510). They state that China fosters a "peaceful international environment" (Harris and Arias, 2016, 510-511) and that "China's leaders seek allies among the developing countries to join with them in creating a new multipolar and more equitable global order" (Harris and Arias, 2016, 512). Although China pursues a positive relationship with most countries, the authors also recognize that they are more cooperative with leftist governments (Harris and Arias, 2016, 522). Lastly, they argue that studies concerned with the creation of dependency ties by China are misleading. The reason for this is, although China has become an important trade partner for Latin America, "The present scale of the trading relations between Latin America and China falls far short of the scale of the region's historical pattern of trade dependency upon the USA and Europe" (Harris and Arias, 2016, 530). The authors go further and add that "trade with China has diversified both the region's sources of imports and its export destinations thereby reducing it historical economic dependency upon the USA and Europe" (Harris and Arias, 2016, 530). In other words, the authors argue that China-Latin America economic relations are beneficial for both parties and enhance the latter's economic autonomy rather than making them dependent on the former.

Some other scholars have a more balanced view of the matter. When analyzing China's relation with Venezuela, To and Acuña (2018) argue that on the economic aspect, China seems to reinforce dependency ties by incorporating its multinational companies in Venezuela to sell its oil (To and

Acuña, 2018, 11). On the other hand, the authors explain that SSC is better suited to understand the relationship's political side as countries have signed several bilateral agreements regarding infrastructure investments and the transference of technology (To and Acuña, 2018, 11).

South-south cooperation scholars tend to see Brazil-China relations as more horizontal than hierarchical. Usually, they analyze both countries in the light of the BRICS group - composed of Brazil, Russia, India, China, and South Africa. Although they recognize that China has a superior economic position, they see both as essential states to seek more fair relations internationally. For example, Amanor and Chichava (2016, 1) compare agricultural initiatives from Brazil and China in Ghana and Mozambique. Although the results achieved by both countries are different, what is relevant here is that both China and Brazil seem to belong to the same category of aid and investment provider to countries in the global south.

Similarly, DeHart (2012) describes how the BRICS pose as an alternative to the Bretton Woods institutions, altogether reshaping the "terms of global policy agreements' ' (DeHart, 2012, 1360). Gosovic (2016) explains that the northern promoted globalization allowed south-south cooperation to flourish as it made countries lower economic barriers and allowed some of them, including China and Brazil, to achieve better economic results and foster cooperation with other developing countries (Gosovic, 2016, 736). Lastly, Vadell (2018) points out that Brazil is a founding member of two Chinese financial initiatives, the New Development Bank and the Asian Infrastructure Investment Bank (Vadell, 2018, 10), positioning both countries as key players to create alternatives to northern institutions.

2.1.2 The challenges to the south-south cooperation framework.

Scholars using the south-south cooperation framework tend to be optimistic about China's engagement with Brazil and Latin America and often neglect critical aspects of this relationship.

Although China seems to be less interventionist in foreign countries' domestic affairs than the US or European countries, it is the only aspect of south-south cooperation that this work can note in its engagement with other less developed countries.

Analyzing other aspects essential to south-south cooperation, such as the nationalization of key industries, the south-south cooperation argument falls short. Looking at Brazil, China has investments in a vast range of sectors. With their state-owned enterprises, China Three Gorges and State Grid, they stand as the second-largest energy provider in the country, participating in 26 energy-related projects. In further chapters, this work will dig deeper into the energy sector, but as previously noted in the literature, Chinese investment in infrastructure projects are much less concerned with promoting cooperation and much more concerned about acquiring the foreign infrastructure market due to the slowdown in its internal demand (Economic Commission for Latin America and the Caribbean, 2013, 11). In other words, with their domestic economy slowing, China sends its state-owned companies abroad so they can still have demand.

Besides, China also found means to control, directly and indirectly, the Brazilian agricultural sector. In 2010, Chongqing Grain Group announced U$ 300 million to build a soybean complex in Brazil, which did not move forward due to local land regulations that do not allow foreigners to own land (China-Brazil Business Council, 2013, 49). Nevertheless, ten years later, interest groups are still lobbying to abolish these regulations so this project can take place. To overcome this barrier, China bought agricultural trading companies in Brazil to control the production level and assure that they will have access to the production without necessarily owning the land (da Rocha and Bielschowsky, 2018, 21). In agriculture, it is yet again possible to note China's tendency to hold a key sector of Brazil's economy rather than seek cooperation. In this particular sector, it is

possible to associate Chinese investment with China's concern with losing self-sufficiency in access to food (China-Brazil Business Council, 2013, 38).

The agricultural and energy sectors briefly discussed here are evidence that China is not concerned about making sure that the vital economic sectors remain nationalized; instead, they seek opportunities to expand their market and attend to their internal demand. It is possible to find similar evidence in the automotive industry[2] and extractive industries such as oil and gas (China-Brazil Business Council, 2014, 09).

The presence of Chinese state-owned enterprises in Brazil leads us to think of a second major issue associated with the south-south cooperation framework, the horizontality with which they treat Brazil and China. In the light of BRICS, south-south cooperation scholars tend to position both countries side-by-side as Amanor and Chichava (2016) did when they compared Brazil and China's agricultural initiatives in Ghana and Mozambique. As it was possible to see in the above example, if we look at investment data, the relation seems to be more vertical than horizontal. If we extend our analysis to trade data, the evidence is even more apparent. In addition to being present in a vast range of Brazilian sectors, as presented above, China is the leading trading partner of the South-American country. According to the World Bank (2020), in 2017, China stood as the primary buyer of Brazilian exports, accounting for 21.81% of the total. The second leading buyer, the USA, bought only 12.47%. On the other hand, in the same year, Brazil represented merely 1.28% of Chinese exports. This illustrates how China is more important to Brazil than Brazil is to China. If we dig deeper into the data, it is possible to note how the trade flows tend towards Brazil exporting raw materials and China exporting industrial goods, which usually have a higher value, which negatively impacts Brazil's terms of trade.

[2] Although in automotive industry private investment leads the way

Considering the discussion in this section, evidence suggests that the south-south cooperation framework explains only a few aspects of the Brazil-China relation, and more broadly, Latin America-China relations. Although China does not seem to directly influence Brazil's political decisions, it is questionable whether it gives more autonomy to less developed countries to think about alternative ways of economic development due to the high presence of their investments and the weight of their trade. Chinese capital through state-owned enterprises seems to be focusing more on attending to their own needs rather than creating new possibilities for countries in the periphery.

2.2 Dependency theory

Dependency theory emerged during the 1960s when Latin-American scholars and policymakers were dissatisfied with the dominant view over development issues, broadly known as modernization theories (Larrain, 1989, 98; Stallings, 2020, 04). The central aspect of modernization theories that dependency scholars questioned was their belief that every country could pass through the same development stages despite their historical differences, as long as they followed an adequate institutionalization process (Larrain, 1989, 99). Modernization scholars seemed to ignore that, for example, while England was going through its second industrial revolution, "countries" in the Americas, Africa, and Asia, were still colonies. - also that England had never been a colony itself. They also seemed to ignore the differences between the kind of colonization that the United States and other countries had been through. Whereas the United States was a settlement colony, other Latin-American colonies were resource-extraction and resource-exporting colonies. While England and the United States had their industries, different countries barely were actual countries, occupying the position of colonies or recently decolonized countries.

Cardoso and Falleto (1975) explained that peripheral countries do not come to exist without a history behind them. These countries had their economies conditioned by the colonial dynamics they went through. Looking at Brazil's case, it only leaves the colony condition when England needs new markets to export its industrialized goods and sources to supply them with natural resources. Thus, England becomes the country's leading trade partner, conditioning it to produce agricultural commodities and industrial goods buyers (Cardoso, Falleto, 1975, 33). This is to say that historical differences lead to different development opportunities and that hardly following institutional prescriptions would lead to the same development level among countries.

Dependency scholars pointed out that the integration between developed and developing countries was favourable for the former. Rather than a mutually beneficial relationship and the emergence of interdependency, i.e., one depending on the other, dependency theory pointed out that developed countries were able to create mechanisms through international integration in which the growth of developing countries relied on the expansion of the former (Dos Santos, 1970; Cardoso, 1972; Kaufman, Chernotsky, Geller, 1975; Biersteker, 1993; Blaney, 1996; Cardoso, 2009; Mihalache-O'keef, Li, 2011, 74; Higginbottom, 2013; Casanova, Xia, Ferreira, 2016; Castañeda 2017; Mason, 2017; Wise, Veltmeyer, 2018; da Rocha, Bielschowsky, 2018; Giraudo, 2019; Kvangraven, 2020; Stallings, 2020).

Studies using the dependency theory were mainly concerned with understanding the differences between developed and developing economies. Why are some countries able to reach higher levels of development, whereas others lay behind?

The dependency theory argues that there is a division between "core" and "periphery" in international society. The former creates mechanisms to subordinate the development of the latter to its own development. This perception is rooted in Prebish's (1940) theory about unequal

exchanges in trade relations, which, in broad terms, argues that the economic relations between core and periphery will always be more advantageous for the former, and on the structuralist approach that emerged out of Prebish's theory, which was not only concerned with economic issues but also political and social problems (Stallings, 2020, 04).

Unequal exchange theory suggested that peripheral countries should apply an import substitution industrialization (ISI) strategy, reducing their reliance on the export of primary products and increasing their industrialization level. The reason for that would be the deteriorating terms of trade for primary products, and that industrialization would lead to higher wages (Stalings 2020, 18).

One of the most common definitions used in the literature to explain the dependency relation is the one written by Dos Santos (1970, 231), which states that:

> The relation of interdependence between two or more economies, and between these and world trade, assumes the form of dependence when some countries (the dominant ones) can expand and can be self-sustaining, while other countries (the dependent ones) can do this only as a reflection of that expansion, which can have either a positive or a negative effect on their immediate development.

Scholars using this perspective also believed that Lenin's characterization of Imperialism was no longer suitable to thoroughly explain the international expansion of national economies and capital accumulation forms (Cardoso 1972, 88). The reason for that was that imperialism did not account for some complexities present in Latin-American countries, such as local owners holding part of the productive sectors and the possibility of achieving economic growth even within a dependency relation (Cardoso 1972, 86).

The central hypothesis initially developed was that some countries developed at others' expense (Dos Santos 1970, 231). This is to say that more developed countries usually were able to produce and sell higher-value products, such as industrialized goods. In contrast, countries in the periphery remained primary product exporters, which have their value much more conditioned to external demand. This relationship would lead to favourable terms to the core rather than the periphery. The periphery countries would engage in such a relationship because it represents a primary source of revenue. The core countries complicate the periphery's industrialization process as they have much more competitive products (Kaufman, Chernotsky, Geller, 1975, 305). This would happen because the international demand for raw products would press local governments to keep them producing it, displacing small producers and concentrating the land in the hands of few big producers (Kaufman, Chernotsky, Geller 1975, 307). Consequently, a common characteristic in the dependent countries is the presence of monocultures (Dos Santos 1970, 232), which is known for causing several social and ecological impacts. This process created metropolitan-satellite relations, in which the former would shape what the latter would produce, at what level, and thus pace the development of the peripheral economies (Kaufman, Chernotsky, Geller 1975, 304).

Nevertheless, not only international dynamics were significant for the establishment of dependency relations. Internal social, political, and economic factors - much neglected for studies that claimed themselves as users of the dependency approach - were significant to understand the full dynamics of dependency (Dos Santos 1970, 23; Cardoso 1972, 90). According to Cardoso (1972, 87):

> [...] in countries like Argentina, Brazil, Mexico, South Africa, India, and some others, there is an internal structural fragmentation, connecting the most 'advanced' parts of their economies to the international capitalist system. Separate, although subordinated to these

> advanced sectors, the backward economic and social sectors of the dependent countries then play the role of 'internal colonies.'

By arguing this, the author explains that dependency relations can lead to a level of development in peripheral countries. Cardoso argues that it is an essential aspect of dependency, so a specific internal class that benefits from foreign trade and international investments can locally defend the metropolitan economies' interests (Cardoso 1972, 90). Cardoso restated in a later work, although more conservatively, those economies that faced dependency were not subject to economic stagnation, but that they could achieve economic growth depending upon the country's international integration (Cardoso 2009, 300).

Focusing on how capitalism created a particular monopoly over knowledge, Vicent (2010) shows how even developing economies considered to be a "case of success" in achieving economic growth rely each time more on major countries - owners of knowledge through patents - to pace its internal development. The author focuses mainly on Taiwan and India and shows how these two economies still lay behind and depend on- developed countries' knowledge ownership (Vicent 2010, 85).

Some other scholars focused on the contradictions that dependency relations create. Blaney (1996) argued that sovereignty and dependency could not coexist (Blaney, 1996, 463). The author explains that the expansion of capitalism led to a situation in which countries in the periphery have no autonomy to determine their development path. The international division of labour that emerged from capitalism made raw material producers subordinate to advanced technological producers (Blaney 1996, 472).

A significant part of the literature identified globalization as the primary mechanism to reinforce dependency ties. It promoted the neoliberal agenda, leading to a high foreign direct investment

(FDI) presence in peripheral countries (Kaufman, Chernotsky, Geller 1975, 305; Tausch 2019, 82). The argument is that multinational corporations in domestic economies are one of the central representations of economic dominance. North American and European entrepreneurs displaced local investors through FDI and Mergers & Acquisitions, controlling not only the export sector (raw materials) but also the industrial sector when present (Kaufman, Chernotsky, Geller 1975, 305).

Initial dependency studies were concerned with the domination of the United States and European countries over Latin America. They argued that Latin-American countries were born dependent as Spanish, Portuguese, and English colonialism conditioned Latin America's production of raw products to fulfill their demand for commodities (Kaufman, Chernotsky, Geller, 1975, 304; Stalling, 2020, 17).

After 1945, with the end of the second world war, some factors began to change. First, with the decline of European prominence, the United States emerged as the most potent state internationally. Second, with a more stable scenario ahead and with the influence of the United Nations Economic Commission for Latin America and the Caribbean (ECLA)[3], Latin-American countries started to think about new forms of development and to industrialize. Because they did not have the necessary capital to do so, they attracted North-American multinational corporations (MNCs), hoping that they would bring the required capital and technology to promote industrialization. The outcome of this dynamic was the MNCs having access to new markets by avoiding import tariffs, repatriation of profits, and only a limited number of countries achieving some industrialization by the end of the 1960s (Stallings, 2020, 18-19). Between the 1970s and the 1980s, Western powers and institutions in Latin-American countries increased drastically. This

[3] Institution that emerged from Pebrish's ideas under the United Nations which several dependency scholars were part of.

was led by the oil crisis and increased international debt, which made institutions like World Bank and IMF push the policies suggested by the Washington Consensus: "macroeconomic stabilization; liberalization, privatization, and a greater role for the private sector; and opening up to foreign trade and capital flows" (Stallings, 2020, 22). By the mid-1990s, Higginbottom (2013) argued that European companies, mainly from the United Kingdom and Spain, restarted to reinforce dependency ties. The primary evidence to support their argument was that Europe's capital inflow in Latin America was higher than in the US. They directed their capital to the primary sector, and the profits made out of it were repatriated (Higginbottom, 2013, 199). The author concludes that "Contemporary imperialism in Latin America is not just about U.S. domination; it is also about that of Spain, the UK, and the rest of Europe" (Higginbottom, 2013, 201).

More recent studies, mainly after the 2008 economic crisis, started to identify China as a possible new gravitational center for dependent countries (Casanova, Xia, and Ferreira, 2016; Mason; 2017; da Rocha and Bielschowsky 2018; Giraudo; 2019; Stallings, 2020). Some scholars (Casanova, Xia, and Ferreira, 2016, 216) identified that China's economic ties with Latin America helped the latter pass through the 2008 financial crisis, as the former was expanding and needed commodities to sustain its growth. However, once Chinese growth slowed, and as a consequence, so their demand for commodities, it impacted Latin-American economies as the commodities price dropped. Particularly for Brazil, Casanova, Xia, and Ferreira (2016, 220) identify that in 2014, 80% of the country's exports to China were commodities, such as soybeans, crude oil, and iron ore. This would leave Brazil's economy dependent upon the Chinese demand for these products. Da Rocha and Bielschowsky (2018) identified that China's engagement with Latin-American countries reinforces the commodity-export model. Thus, this relationship reflects a new center-

periphery dynamic (da Rocha and Bielschowsky, 2018, 10). The authors add that this is particularly problematic to Latin-American countries as they lack a development project to take advantage of China's presence in the region. It could lead to a reprimarization of Latin-American economies (da Rocha and Bielschowsky, 2018, 24). Looking specifically at the soybean nexus, Giraudo (2019) argues that China is reinforcing dependency patterns in Latin America by investing in land, promoting corporate takeovers, investing in infrastructure, and controlling biotechnological innovations (Giraudo, 2019, 61). The author points out that trade is just a reflection of dependency, not its cause (Giraudo, 2019, 74). The main reason for Chinese interest in Latin-American soybean would be to avoid themselves depending upon the soybean of the United States' multinational corporations (Giraudo, 2019). A critical aspect brought by the author is that China not only invests directly in the commodity they are interested in but also in infrastructure projects indirectly linked to it, so they can assure that the products will not face challenges to be exported (Giraudo, 2019, 71).

2.2.1 The dependency theory gaps:

Although dependency scholars provide an insightful understanding and a better characterization of China-Brazil relations, it leaves some gaps open. First, they pay little to no attention to state-owned enterprises' role, very characteristic of the Chinese presence in Brazil and other Latin American countries. Second, dependency theory studies often focus on understanding how foreign direct investment in manufacturing and commodities trade patterns leads to dependency relations. They leave outside their analyses *how* or *if* investments in infrastructure (particularly in the energy sector in our case) reinforce dependency or move the relationship between countries closer to a cooperation framework.

Analyzing the issues mentioned above, it is possible to note that studies concerned with Brazil- and Latin America-China relations often miss essential aspects of how China became a metropolitan country for the region. They also fail to investigate what could characterize China's dependency by neglecting an in-depth study about state-owned enterprises' role in countries that receive Chinese capital. The studies often look at investment levels or how China has better terms of trades with its Latin American counterparts to give validity or falsify the dependency argument. This project proposes the identification of dependency by investigating if the presence of China's state-owned enterprises in the energy sector of Brazil creates new patterns of dependency, as former countries considered as metropolises (especially the USA) adopted different forms of dependency relations with the region, heavily characterized by the presence of private-owned multinational corporations. If China is reproducing dependency patterns, what characterizes them? What are the characteristics of China-Brazil dependency?

Whereas most dependency studies are concerned with looking to trade between commodities (from the satellites countries) and industrial goods (from the metropolis), and investments from the metropolis in the primary sector of the satellites, not much attention is paid to investments in infrastructure projects, such as the energy sector. By choosing this sector, the project adds another layer of analysis to how dependency can operate with a metropolis directly controlling a significant share of a vital sector (energy) for any country.

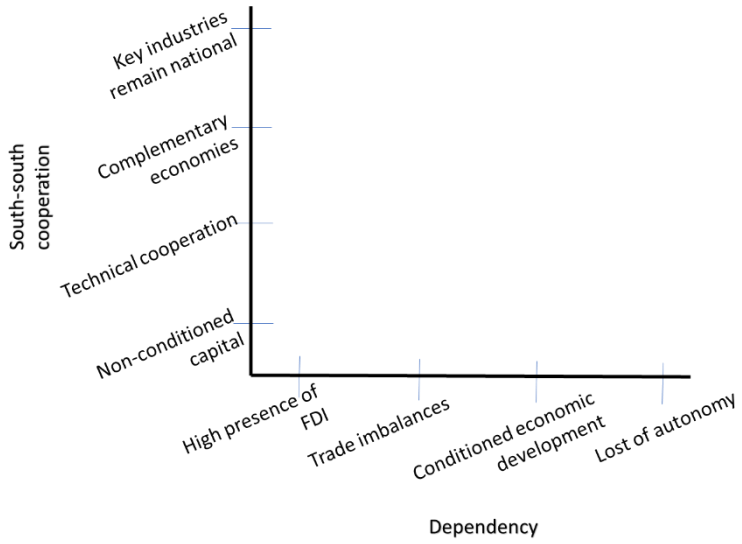
Nevertheless, instead of considering the relation between south-south cooperation and dependency as a continuum where the existence of one means the absence of the other, this work proposes thinking about the relation as an L-shaped diagram (Figure 1). It means that this work considers the possibility of dependency and cooperation aspects to coexist, even if the stronger presence of one means a lower presence of the other. In other words, although this project expects to find more

evidence that China is closer to constraining Brazil's economic development than assisting the country to sustain its economic growth autonomously, it also expects to find some evidence that China's integration with Brazil (and with most countries) has some level of cooperation.

The reason behind this approach is because China's presence internationally has some unique features, the main ones being that the representatives of China's integration are state-owned enterprises; China invests using a "state-strategy" rather than an "individual company strategy"; the country makes long-term investments, and the country introduces some technological innovation into the recipient country. These characteristics combined allow for a kind of dependency where at least some level of cooperation is present.

In the diagram below (Figure 1), non-conditioned capital, the lowest category on the south-south cooperation axis, is achieved when the economic centre provides investments and other forms of financial support detached from conditionalities; in other words, capital is transferred from the economic centre to peripheral countries without requiring economic or political adjustments from the latter. Technical cooperation refers to the exchange of knowledge in addition to capital provision; in this scenario, the economic centre provides the periphery with the necessary means to advance its production. Some examples of technical cooperation are the share of patents and the exchange of human capital. The complementary economies category represents the scenario in which the interaction between both countries is mutually beneficial; instead of creating trade imbalances and overreliance of one onto the other, the countries achieve a horizontal relationship. Lastly, the "key industries remain national" category refers to the combination of all other categories on the south-south cooperation axis with the addition of no foreign entities in charge of the main industries of peripheral countries.

Figure 1: Framework used to analyze the economic relationship between China and Brazil.



On the dependency axis, the high presence of FDI represents the initial signs of an uneven relationship between the economic centre and peripheral countries; in this scenario, the economic centre controls several industries of the productive sector in the periphery through financial investments. Trade imbalances are noticeable mainly through commodities flowing from the periphery to the economic centre and industrial goods following the contrary direction; this scenario can be aggravated by the high presence of FDI as the money received through commodities trade will go to foreign-owned enterprises, which eventually may repatriate its profits. Next, the conditioned economic development classification represents the scenario in which the peripheral country lost – partially or entirely – its capacity to make its own economic choices; the reliance on FDI and other forms of conditioned capital (such as international organization loans or financial aid) are present to the point where it starts to guide how the country should carry its economic policies. Loss of autonomy is the last stage on the dependency axis; it is the complete alignment from the peripheral countries' economic, political, and social choices to

the central country's interest; the peripheral country falls in this position when it is unable to sustain its economy without the investment and trade from the central nation.

Chapter 3: Mapping Chinese investment in Brazil from 2010 to 2018.

The first section of this chapter aims to present and discuss the big picture of Brazil-China economic relations. Although the project's focus is energy investments, it is crucial to understand how these investments connect to China's broader activities in Brazil. Additionally, it will allow us to contrast what different analysis methods tell us about the nature of the two countries relations. In other words, by having a chapter (3) which looks at the general foreign direct investment data and a chapter (4) that looks at the activities of specific Chinese firms in Brazil in a specific sector, this project will be able to identify if the results it finds are similar or different, i.e. if one or the other method of analysis supports the south-south cooperation argument or the dependency theory argument more that the other.

It is also important to mention that when this work discusses energy investments, it does not include oil investments; it considers both as different categories. The reason for this relies on the fact that when this work discusses “energy,” it refers to electricity generation and related activities such as transmission lines and distribution firms. In Brazil, oil represents only 2% of the country’s electricity generation (Energy Research Company, 2019) and is mainly used for other activities, such as automobile locomotion (Energy Research Company, 2019) or as an export commodity. Among the investments labelled as “energy” are hydroelectric, solar, eolic, biomass, thermoelectric and other kinds of electricity generation and its related activities.

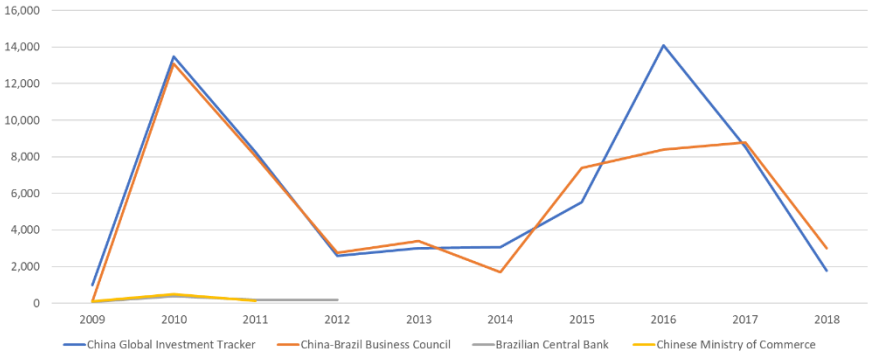
Some of the questions this chapter intends to answer are, where is Chinese money invested? Does Chinese investment follow an identifiable pattern? Is there evidence that it can be associated with

a more extensive Chinese strategy to connect internationally (such as the Belt and Road initiative)? What is the share of investment between private Chinese firms and state-owned enterprises? What are the trade patterns between China and Brazil? By having a macro understanding of China-Brazil economic activities, this project expects to understand how the energy sector activities connect to the country's broader movements.

3.1 Chinese economic relations with Brazil between 2010 and 2018.

China-Brazil economic relations trace back to the last century. However, only after 2010, did the proportion of these countries' integration started to become relevant. As discussed in the introduction of this project, the data related to Chinese investment is inaccurate due to the lack of transparency on the international activities of the Asian country. To exemplify of how cautious the analysis needs to be and how imprecise the data is, in 2009, the China Global Investment Tracker identified US$ 1,000 million of Chinese investment in Brazil. For the same year, the China-Brazil Business Council identified US$ 95 million. The Brazilian Central Bank identified US$82 million, and the Chinese Ministry of Commerce (MOFCOM) identified US$ 116 million. Looking at 2010 and further years, the difference between the sources remains, except between the China Global Investment Tracker and the China-Brazil business council. For both sources, there are differences, but they remain significantly lower. In 2010 the China Global Investment Tracker identified US$ 13,490 million of Chinese investment in Brazil. For the same year, the China-Brazil Business Council identified US$ 13,090 million. The Brazilian central bank identified US$ 395 million, and the Chinese Ministry of Commerce (MOFCOM) identified US$ 487million.

Chart 1: Chinese investment in Brazil 2010-2018 according to different sources (US$ million)



Source: China Global Investment Tracker, 2020

In a 2018 report, the Brazilian government recognized this situation occured because China channelled the majority of its investment in Brazil through Luxembourg. In 2010, China channelled 91% of its investments, and 66% in 2015 (Banco Central do Brasil[4], 2018, 16). For this reason, when presenting data, this project will contrast the Chinese Global Investment Tracker and the China-Brazil Business Council to increase our precision, as their methodology captures the majority of the China-Brazil economic relationship.

2010:

2010 was a turning point in the China-Brazil relationship and the year that Brazil received the highest amount of Chinese capital between 2010-2018. The Chinese Global Investment Tracker estimated an amount of US$ 13,490 million, and the China-Brazil Business Council (2013) estimated an amount of US$ 13,090 million. The sectors ranged from natural resources extraction, including mining and oil, to construction machinery, financial services, and energy transmission.

[4] Central Bank of Brazil.

Another remarkable fact is that it was the year of the arrival of Chinese state-owned enterprises and the year with the highest Chinese investment. The three major investments were from Sinopec[5], Sinochem[6], and State Grid.

Sinopec invested US$ 7,100 million (Chinese Global Investment Tracker; China-Brazil Business Council, 2013, 69) in the country to buy 40% of Repsol, a Spanish private company, acquiring the right to extract oil[7] in Brazil. The second most significant investment came from Sinochem. They brought US$ 3,070 million to the South-American country to buy 40% of Statoil operations in Brazil, which was formerly a Norwegian state-owned company. Here again, the Chinese capital aimed at oil extraction. The third major investment was from State Grid, with US$ 1,720 million (China Global Investment Tracker) to buy seven companies from PLENA Transmissoras - formerly owned by Spanish private firms. With this investment State Grid started to control a small share of energy transmission lines in Brazil.

Other significant investments were US$ 1,200 million (China Global Investment Tracker) from East China Mineral Exploration and Development Bureau[8] to buy an iron ore mine, previously owned by a Brazilian businessman. Sany Heavy[9], a privately owned enterprise, invested US$ 200

[5] "Sinopec Group is the largest oil and petrochemical products suppliers and the second largest oil and gas producer in China, the largest refining company and the third largest chemical company in the world. Its total number of gas stations ranks the second place in the world" (Sinopec, 2021)

[6] "Sinochem Group is a leading integrated operator in oil and chemical industry, providing agricultural inputs (seeds, agrochemicals and fertilizers) and modern agricultural services, and exerting strong influence in city operation and non-banking financial service sector" (Sinochem, 2021). The company is Headquartered in Beijing, China and "is a state-owned enterprise under the supervision of State-owned Assets Supervision and Administration Commission of the State Council of China" (Sinochem, 2021)

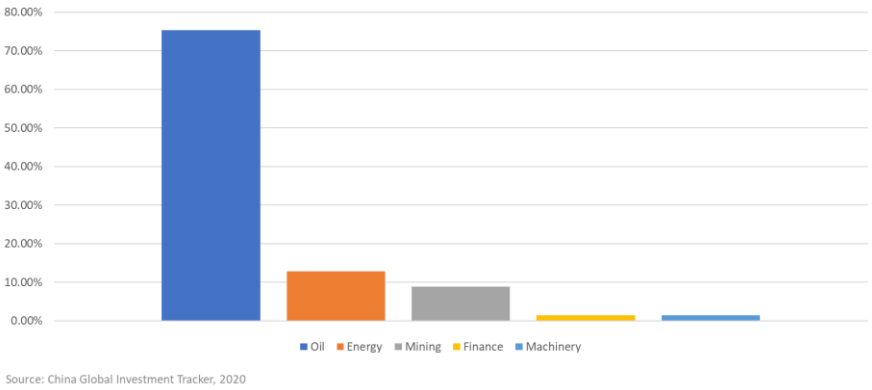
[7] According to the Brazilian regulations, every resource under the country's territory (which includes oil and gas), belongs to the Federative Union. To explore these resources a company either has to win a concession auction or aquire other company's concession, depending on the approval of the Brazilian National Agency of Petroleum, Natural Gas and Biofuels (National Agency of Petroleum, Natural Gas and Biofuels, 2020).

[8] The company is a state-owned enterprise that works with "regional geological survey, solid mineral exploration, geochemical prospecting, geological survey remote sensing, preventing and controlling geological disasters. East China Mineral Exploration & Development Bureau also offers hydrological, engineering, and environmental survey" (Bloomberg, 2021).

[9] Private-owned enterprise that produces "construction and mining equipment, port machinery, oil drilling machinery, and renewable wind energy systems" (Sany Global, 2021).

million in a greenfield project to produce construction machinery; and the Chinese Investment Corporation[10] invested US$ 200 million in BTG Pactual[11] (China Global Investment Tracker).

Chart 2: Percentage of Chinese investment per sector in Brazil in 2010



As noted in chart 2, in 2010, China invested heavily in having access to natural resources in Brazil, notably oil and mining. Besides, it also showed an initial interest in the infrastructure sector, purchasing the administration of several transmission lines. Interestingly, with its investment in energy transmission and oil extraction, China started overtaking the European capital in Brazil. Adding to this, 98.52% of the money invested came from state-owned enterprises.

2011:

Although the total amount of capital invested was lower than in 2010, in 2011, the number of projects with Chinese participation increased, along with the number of sectors China decided to join in Brazil. According to the China Global Investment Tracker, Chinese capital totalized US$ 8,250 million between private and state participation. The number that the China-Brazil Business Council arrived at was very similar, US$ 8,030 million. In 2011, Chinese firms invested in

[10] "China Investment Corp is an investment management firm. The Company is a wholly state-owned company and was established as a vehicle to diversify China's foreign exchange holdings and seek maximum returns for its shareholder within acceptable risk tolerance" (Bloomberg, 2021).
[11] "BTG Pactual S/A. provides financial services. The Company offers asset and wealth management, investment banking, trading, corporate lending, sales, and other related solutions. Banco BTG Pactual serves customers in Brazil" (Bloomberg, 2021).

agriculture, mining, automotive, banking, telecommunications, and oil sectors. Again, state-owned enterprises were responsible for the three most significant investments.

The most voluminous was from Sinopec, with US$ 4,800 million. The company bought 30% of Galp Energia (China Global Investment Tracker), a Portuguese company that, in partnership with Petrobras,[12] participated in 19 projects and 33 oil extraction sites (China-Brazil Business Council, 2013, 71).

The second major investment was from a partnership between three state-owned Chinese firms: Taiyuan Iron[13], CITIC[14], Baosteel[15]. This group of companies invested US$1,950 to buy 15% of the Companhia Brasileira de Metalurgia e Mineração (China Global Investment Tracker), the world's largest producer of niobium[16]. The third-largest source of Chinese investment in Brazil is one of the reasons for the difference between the numbers reported by the China Global Investment Tracker and by the China-Brazil Business Council (2013, 49). Whereas the first identified an amount of US$ 570 million from the Chongqing Grain Group[17] in agriculture-related activities, the latter identified an amount of US$ 300 million. Still, it is relevant to note that this is a

[12] Brazil's main state-owned oil company.

[13] "Taiyuan Iron & Steel (Group) Co., Ltd. produces steel products. The company manufactures, processes, deliveries, and trades stainless steel, carbon steel, silicon steel, and other steel products. Taiyuan Iron & Steel (Group) supplies its products in petroleum, chemical, shipbuilding, container, railway, automobile, and other fields." (Bloomberg, 2021)

[14] "CITIC Group is a large state-owned multinational conglomerate with a wide range of businesses covering finance, energy and resources, manufacturing, engineering contracting, real estate and others" (CITIC Group, 2021)

[15] "Baosteel, with iron and steel as its main business, manufactures premium steel products with high technologies and a high added value and fosters three major product categories,namely carbon steel, stainless steel and special steel […] They are extensively applied to the industries such as automobile, household appliances,petrochemical, machinery, energy, transportation,metalwork, aeronautics and astronautics, nuclear power and electronic instruments." (Baosteel, 2021)

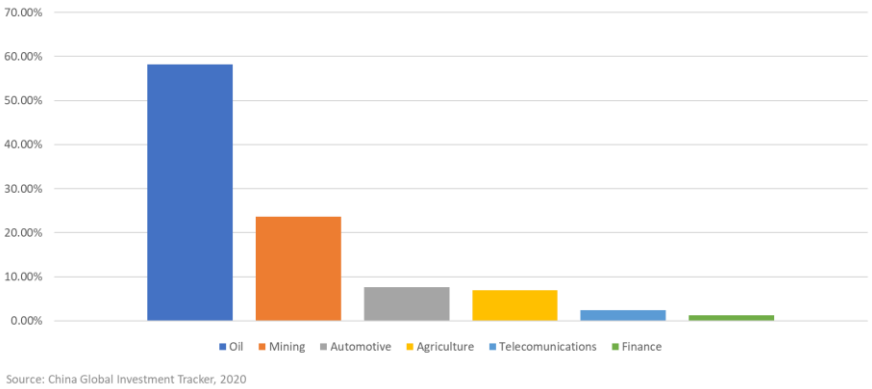
[16] Manufacturers use this ore for the construction of gas and oil pipelines, rockets, etc.

[17] Chong Qing Grain Group CO is a state-owned enterprise "that sells agricultural products. The company wholesales and distributes rices, flours, oils, and other products. Chong Qing Grain Group also offers agricultural products processing, storage, and transportation services." (Bloomberg, 2021)

considerable amount from a state-owned enterprise for the average international investments seen in agricultural activities.

Other relevant investments came from JAC Motors[18] and Chery Auto[19], two private companies that invested US$ 100 million (China Global Investment Tracker) and US$ 530 million (China Global Investment Tracker), respectively, in the automotive industry with greenfield projects to open production facilities in Brazil. Additionally, ZTE[20] invested US$ 200 million in the telecommunications industry and the Industrial and Commercial Bank of China[21] US$ 100 million to open its first branch in the South-American country.

Chart 3: Percentage of Chinese investment per sector in Brazil in 2011



Source: China Global Investment Tracker, 2020

Similar to 2010, in 2011, Chinese investment remained heavily in the extractive industry, with oil and mining leading the sector destination for their capital. However, some new sectors sparked

[18] "JAC Motors is a comprehensive automobile enterprise that integrates R&D, production and sales of a full range of commercial vehicle, passenger vehicle and powertrain, and covers many fields such as ride hailing/sharing and financial services." (JAC Motors, 2021).

[19] "Chery Automobile Co., Ltd. manufactures and sells automobiles. The company produces sedans, commercial vehicles, passenger cars, light trucks, and other products. Chery Automobile markets its products worldwide." (Bloomberg, 2021).

[20] "ZTE Corporation operates carrier network business. The company offers wireless access, wired access, and other services. ZTE also provides smart phones designing, production, marketing, and other services." (Bloomberg, 2021).

[21] "Industrial and Commercial Bank of China Limited provides banking services. The company offers deposits, loans, fund underwriting, foreign currency settlement, and other services. Industrial and Commercial Bank of China provides its services to individuals, enterprises, and other clients" (Bloomberg, 2021). The Bank was ranked the 1st place among the Top 1000 World Banks by The Banker, ranked 1st place in the Global 2000 listed by Forbes (ICBC, 2021)

China's interest. Brazil received investment from state-owned enterprises in the banking sector and in agriculture. Brazil received money from a company (ZTE) in the telecommunications sector, which has a hybrid shareholder structure, partially owned by private investors and partially owned by the Chinese state. The private sector entered heavily into the automotive industry, with two companies opening greenfield projects to produce cars in Brazil's territory.

Although China diversified its investment in 2011, it is possible to note similarities when comparing it to 2010. For both years, the state-owned enterprises were interested in Brazil's natural resources, notably oil and mining. In 2011, China added to the equation its interests in Brazil's agricultural sector. The industrial investments were more of private-capital interest. As pointed by the China-Brazil Business Council (2013, 41), the two firms saw Brazil as an entrance door to the rest of Latin America's market.

2012:

In 2012 Brazil received less investment in monetary values and in the number of projects from China than the other two years, but still far superior than yearly amounts experienced before 2010 (China Global Investment Tracker). Chinese capital consisted of US$ 2,600 million in 2012, again with the state-owned enterprises heading the ranking of the amount invested. The sectors invested were not as diverse as in 2011. It concentrated the capital in the energy, finance, technology, automotive and logistics sectors.

The two highest investments came from the same company: State Grid. The Chinese company bought from the Spanish firm Actividades de Construcción y Servicios (ACS) the operation of seven transmission lines for the amount of US$ $940 million (Chinese Global Investment Tracker;

China-Brazil Business Council, 2014, 13). Also, in partnership with the Brazilian firm COPEL[22], State Grid won the bid to build and operate transmission lines that distribute the energy generated by the Teles Pires[23] and Colíder[24] hydroelectric plants (Agência de Notícias do Paraná, 2012). This project assured U$550 million from Chinese investment (Chinese Global Investment Tracker; China-Brazil Business Council, 2014, 13).

Although China's amount invested in Brazil converges between the China-Brazil Business Council and China Global Investment Tracker, mainly regarding the two projects mentioned above of State-Grid, the sources diverge about some other lower-value projects. Although the China Global Investment Tracker reports investments from Beijing Auto[25] in the automotive industry and from the China Investment Corporation[26] in the logistic sector, the China-Brazil Business Council does not identify these investments. However, the China-Brazil business council reports investments from private entities in this same industry, similar to the one informed by the China Global Investment Tracker for the Beijing Auto.

[22] Copel - *Companhia Paranaense de* Energia, is the largest company of the State of Paraná. The Company directly serves 4,478,767 consuming units, across 395 cities and 1,113 locations (districts, villages and settlements), located in the State of Paraná. This network consists of 3.5 million homes, 82 thousand plants, 382 thousand commercial establishments and 360 thousand rural properties.

[23] "The Teles Pires Hydroelectric Plant, built on the Teles Pires River, a tributary of the Tapajós River, on the border of the states of Pará and Mato Grosso, in the municipalities of Jacareacanga (PA) and Paranaíta (MT) has an installed capacity of 1,820 megawatts, enough energy to supply a population of 13.5 million inhabitants" (Tele Pires HPP, 2021).

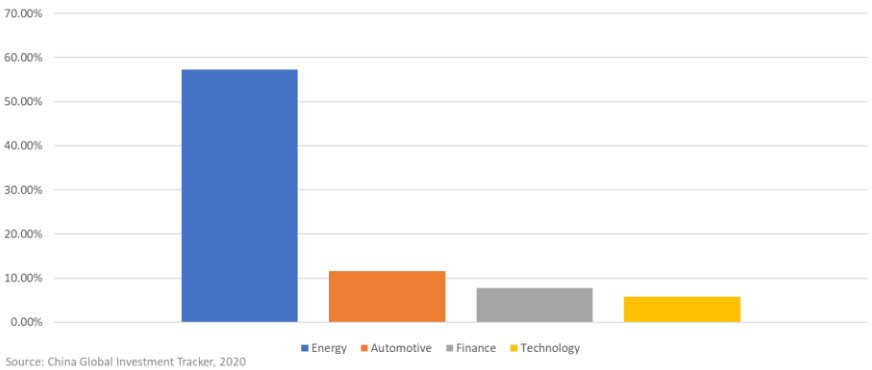
[24] The Colider hydroelectric plant was built on the Tele Pires River and has an installed capacity of 300 megawatts, enough to supply a population of 1 million inhabitants. (Agência Estadual de Notícias do Paraná, 2019).

[25] "Beijing Automotive Group Co., Ltd (BAIC) is a major automobile manufacturer in China established in 1958 and headquartered in Beijing. BAIC has become a large leading company automobile enterprise group covering R&D and manufacturing of vehicles and parts & components, auto service trade, comprehensive travel service, finance and investment, general aviation and other business" (Beijing Automotive Group, 2021).

[26] "China Investment Corporation (CIC), founded on 29 September 2007, was established as a vehicle to diversify China's foreign exchange holdings and seek maximum returns for its shareholder within acceptable risk tolerance" (China Investment Corporation, 2021).

Both sources converge on Lenovo's[27] US$ 150 million investment in the technology sector (China Global Investment Tracker; China-Brazil Business council, 2014, 13). Lastly, another Chinese bank started operating in Brazil. The China Construction Bank[28] bought the operations of the German WestLB (China Global Investment Tracker) for the amount of US$ 200 million.

Chart 4: Percentage of Chinese investment per sector in Brazil in 2012



In 2012 it was possible to note a decline in capital invested in natural resources. If in 2010 and 2011, mining and oil extraction composed a significant part of China's investment in Brazil, in 2012, it was nonexistent. The energy sector led the way and remained substantial as it was in previous years. The automotive industry, technological sector and financial institutions maintained their interests in the South American country. Although private capital had more investments, the amount invested by state-owned companies remained untouched at the top.

[27] "Lenovo Inc. operates as a technology engineering firm. The Company creates and builds engineered personal technology products. Lenovo's products include personal computers such as desktops and laptops, tablets, servers, and related accessories." (Bloomberg, 2021).

[28] "China Construction Bank (CCB), one of the biggest financial conglomerates of the world, a Chinese public bank, founded in 1954, with the goal to support China´s development […] Since 2014, it is a mark in Brazil with its subsidiary CCB Brasil, representing a highlight in the strategy of CCB´s internationalization of CCB, with the goal of being the main intermediary of financial business to support the foreign business stream between Brazil and China, being the anchor operation of the conglomerate in Latin America." (China Construction Bank, 2021).

2013:

In 2013 the amount of confirmed Chinese investment in Brazil slightly increased to US$ 3,020 million. However, the range of sectors in which China allocated its capital remained limited. In this year, it is possible to note the return of capital allocation in natural resources. Chinese investments were in oil exploration and agriculture. China kept banking and finance, and energy as part of its assets, and construction equipment manufacturing rejoined China's interest in Brazil (China Global Investment Tracker).

In 2013, this project noted a near to zero presence of Chinese private investment in Brazil. The only traceable private capital investment was by a company that has a mixed ownership structure, BBCA[29]. The group, which has as one of its shareholders the state-owned enterprise COFCO[30], invested US$ 320 million in agriculture (China-Brazil Business Council 2014, 14; China Global Investment Tracker) to build a corn-processing plant (China-Brazil Business Council 2014).

100% of state-owned enterprises made all other high-value investments. Oil extraction led the way with an investment of US$ 1,400 million by a partnership between CNPC[31], CNOOC[32] (two Chinese state-owned firms), Shell, Total (two European companies), and Petrobras (Brazilian

[29] "China BBCA Group is a mixed ownership enterprise that shareholders mainly manage the company with partially support by the municipal government. It works with large-scale biological fermentation technology. In Brazil, it has two main branches. The BBCA BRAZIL branch located in Maracaju-MS, is responsible for the production, construction engineering and production management of the corn processing projects. The BBCA BRAZIL branch located in Itajaí-SC, is mainly responsible for the sale of various chemical and food products." (BBCA Brazil, 2021).

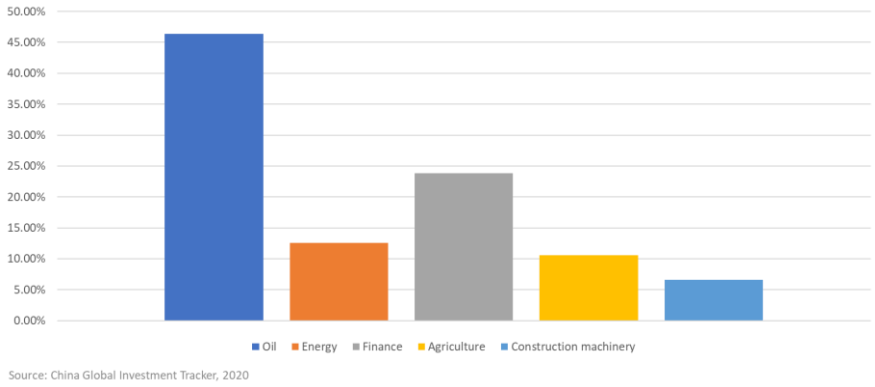
[30] "COFCO Corporation operates as an agricultural products supplier. The company supplies edible oils, corns, wheat, rice, vegetables, sugar, and other products. COFCO also operates real estate development, finance, and other businesses." (Bloomberg, 2021)

[31] "China National Petroleum Corporation (CNPC) is the world's 3rd largest oil company based in China and plays a leading role in China's petroleum industry. [They] integrate the business portfolios of both an oil company and an oilfield service provider, with operations covering the entire oil and gas industry value chain. [They also have] oil and gas assets and interests in over 30 countries." (CNPC, 2021)

[32] "[China National Petroleum Corporation] is the largest producer of offshore crude oil and natural gas in China and one of the largest independent oil and gas exploration and production companies in the world. The group mainly engages in exploration, development, production and sale of crude oil and natural gas." (CNOOC, 2021)

company) (China-Brazil Business Council, 2014, 16; China Global Investment Tracker). It was the first time both Chinese companies invested in Brazil. The second highest investment was made in the banking sector by the China Construction Bank, with the amount of US$ 720 million. The third position belongs to China Three Gorges. The company that operates the biggest hydroelectric power plant[33] in the world joined the hydroelectric sector in Brazil with two investments, one of US$ 130 million (China Global Investment Tracker) to build and operate the Cachoeira Caldeirão hydroelectric power plant[34] and one of US$ 250 million (China Global Investment Tracker) to build and operate the Santo António do Jari hydroelectric power plant[35]. Both investments were made in partnership with EDP energy, a Portuguese company.

Chart 5: Percentage of Chinese investment per sector in Brazil in 2013



Although the value invested did not increase by much, in 2013, China's state-owned companies were still highly interested in Brazil. When comparing it to the other years, it is possible to note a

[33] The Three Gorges Dam is located in the Yangtze River, in China. The installed generation capacity of this powerplant is of 2,500 MW. The company finished the project in 2008, and it is the world's largest hydroelectric powerplant (China Three Gorges, 2021).
[34] The Cachoeira Caldeirão plant has an installed capacity of 219 MW. Its location is the Araguari River which is part of the Amazon Basin. It was built by China Three Gorges Brasil and EDP Energy (EDP Brasil, 2021). In 2018, the District Attorney Office of Amapa State initiated an investigation after local researchers identified higher environmental impacts than expected, including a drastic reduction of native species, the appearance of harmful species for that ecosystem, negative changes in the way of life of local populations, and flooding of more than 100 nesting sites of local birds (Ministério Público do Estado do Amapá, 2018).
[35] The Santo Antônio do Jari plant is located in the Jari River which is part of the Amazon Basin. It has an installed capacity of 392.95 MW and was built by China Three Gorges Brasil and EDP Energy (EDP Brasil, 2021).

specific investment pattern in natural resources combined with investment in infrastructure. In 2013, oil and agriculture led the way in the natural resources sector, whereas the hydroelectric sector was dominant in energy investments. We can also note the increasing presence of Chinese banks, with different brands joining Brazil through these first four years of this project analysis.

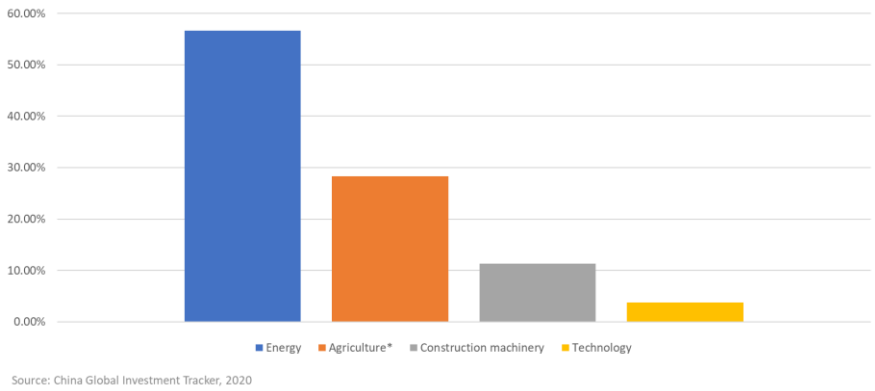
2014:

2014 is a year that has some significant differences between the two databases this project contrasts. Whereas the China-Brazil Business Council (2016) identifies that Brazil received US$ 1,700 million, the China Global Investment Tracker identifies US$ 3,070 million. One of the main reasons for this divergence is investments in agriculture. In 2014 China started acquiring multiple agricultural trading firms through its state-owned company, COFCO (China-Brazil Business Council, 2016, 22). The two most important purchases are the acquisition of 51% of Nidera and 51% of Noble Agri (China-Brazil Business Council, 2016, 22). The problem for this project is that this was a global acquisition, making it difficult to distinguish what amount referred to the Brazilian branches. Whereas China Global Investment Tracker estimated an amount of US$ 750 million, the China-Brazil Business Council did not report any amount. The second major difference between the sources is that the China Global Tracker Investment seemed to double-count an investment of US$ 720 million that the China Construction Bank made in 2013. Excluding both investments, the sources converge again.

In 2014, investments in the energy sector were the most significant. Combined, State Grid and China Three Gorges invested US$ 1,500 million in the energy sector (China Global Investment Tracker). Both firms allocated this capital to the hydroelectric sector. The entrance method of the companies was diverse. In some cases, they invested in greenfield projects to build dams or power plants. In other cases, they bought shares to administer the already existing power plants and

transmission lines. In all the cases, they invested in partnership either with local firms or with foreign firms with previous operations in Brazil (China-Brazil Business Council, 2016, 24-25). The private company ZTE reinvested in the country, this time in a factory, to build fibre-optic material (China-Brazil Business Council, 2016, 24; China Global Investment Tracker). Lastly, the private firm Sany invested US$ 300 million to open a new heavy machinery factory.

Chart 6: Percentage of Chinese investment per sector in Brazil in 2014



In the absence of substantial oil investments, the energy generation sector was the heavier Chinese capital destination. This year, remarkably, China bought shares of two global agriculture trading firms as part of its strategy to ensure enough food to feed its growing population. Consequently, China became a crucial player in Brazil's agriculture sector, as both Nidera and Noble Agri were significant producers of soy, corn, and other grains seeds in Brazil (China-Brazil Business Council, 2016, 22).

2015:

For 2015 there was a significant difference between the two datasets again. Whereas the China Global Investment Tracker identified a sum of US$ 5,220 million of investments from the Asian country in Brazil, the China-Brazil Business Council identified US$ 7,400 million. Most of these differences are private investments in the automotive industry and investments in heavy machinery

factories that the latter identified and the former did not. All other significant investments, mainly from state-owned enterprises, are similar.

Following last year's investments, the energy sector received the highest share of Chinese capital. State Grid invested US$ 2,200 million (China Global Investment Tracker) to build transmission lines to distribute energy from the Belo Monte hydroelectric power plant[36] through Brazilian territory (China-Brazil Business Council, 2016, 28). The second-largest share of investment went to the oil sector. Because it was a loan from the Industrial Bank of China to Petrobras, the China-Brazil Business Council did not consider it a direct investment. On the other hand, the China Global Investment Tracker identified that the amount of the loan was US$ 2,000 million. The third highest investment was again in the energy sector. China Three Gorges invested close to US$ 490 million in the hydroelectric sector. It was designated to acquire existing power plants' operations (China-Brazil Business Council, 2016, 27).

Other relevant investments are US$ 460 million from HNA Group[37] to purchase 24% of the shares from the Brazilian aviation company Azul Linhas Aéreas Brasileiras (China Global Investment Tracker, China-Brazil Business Council, 27, 2016), US$ 100 million from BYD[38] in a greenfield project to build a solar panel factory (China Global Investment Tracker; China-Brazil Business

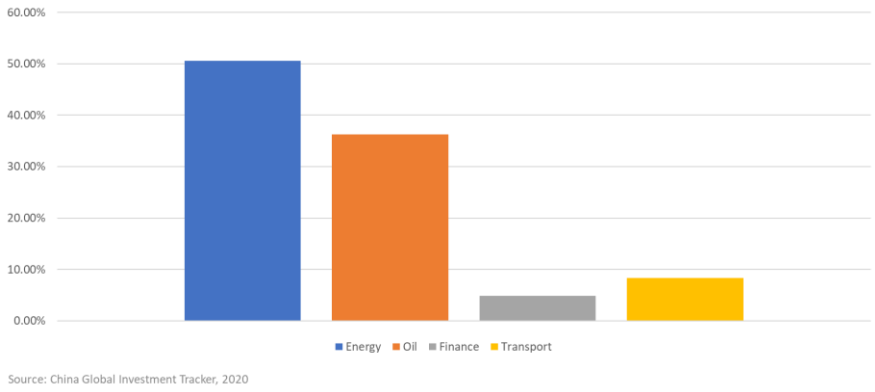
[36] The Belo Monte hydroelectric plant is the largest source of energy in Brazil. It has an installed capacity of 11,233.1 MW, and its location is the Xingu River. The infrastructure company Andrade Gutierrez built the project, and Norte Energia currently operates it (Norte Energia, 2021). Besides being the major energy source in Brazil, the plant is also known for its controversial project. Often, researchers and environmental institutes point to the harmful consequences of this plant. The most recent accusations are that the plant changed the way of life of indigenous communities, forcing them to move to new locations and that it dried up rivers that relied on the waters coming from the Xingu River. Both situations are consequences of the water flow reduction caused by the plant (El País, 2021).

[37] HNA Group is a Chinese private-owned aviation company with operations around the world. The company has shareholding participation of 14 airline companies and manages 16 airports (HNA Group, 2021).

[38] BYD is a private-state-owned enterprise that has several activities across "sustainable" solutions. The company's core business is the production of electric cars, solar panels, and electronics (BYD Group, 2021).

Council, 27, 2016), and US$ 170 million from the China's Bank of Communication[39] to purchase 80% of the shares of the BBM bank (China Global Investment Tracker; China-Brazil Business Council, 27, 2016).

Chart 7: Percentage of Chinese investment per sector in Brazil in 2015



Source: China Global Investment Tracker, 2020

Following a similar pattern from previous years, energy and oil led the way in investment amounts. In 2015, different from previous years in which oil and energy shared the investment percentages and oil received the higher amounts, energy stood in the first position. Although low if compared to investments in other areas, China's presence in the alternative energy sector is also noteworthy. Lastly, in 2015, there was a shift in the private capital's interest in Brazil, for the first time joining the aviation sector.

2016:

2016 is the year in which we can see the sharpest difference in China's invested amount in Brazil, contrasting the two different sources. While the China-Brazil Business Council (2017, 26) reported around US$ 8,400 million of China's investment in Brazil, the China Global investment tracker

[39] "Bank of Communications provides banking services. The company offers deposits, loans, domestic settlement, currency trading, and other services. Bank of Communications provides its services to individuals, enterprises, and other clients" (Bloomberg, 2021). The bank has operations in 10 countries (BOCOM BBM, 2021)

reported US$ 14,080. Despite this difference, for both sources, 2016 was a year in which Chinese investment significantly increased in Brazil.

The highest amount invested was US$ 5,580 million in the energy sector by State Grid (China Global Investment Tracker). The company directed most parts of its investment towards purchasing 55% of the shares from the company CPFL Energia. This company had in its portfolio a traditional sector in China's interest, hydroelectric power plants and transmission lines, but also had alternative energy options, such as solar and wind (China-Brazil Business Council, 23-24, 2017). The second major investment, US$ 3,660 million, was also in the energy sector. This time, it came from China Three Gorges (China Global Investment Tracker). The company concluded the transaction to operate two hydroelectric power plants in Brazil (Bloomberg, 2016). China Three Gorges also purchased the operations of Duke Energy for US$ 1,200 million, which included another ten hydroelectric power plants (China Global Investment Tracker; China-Brazil Business Council, 23, 2017). The third major investment, US$ 1,500 million, was in mining. The China Molybdenum company[40] bought the operations related to niobium and phosphates[41] from The Anglo American Group (British) (China Global Investment Tracker; China-Brazil Business Council, 25, 2017).

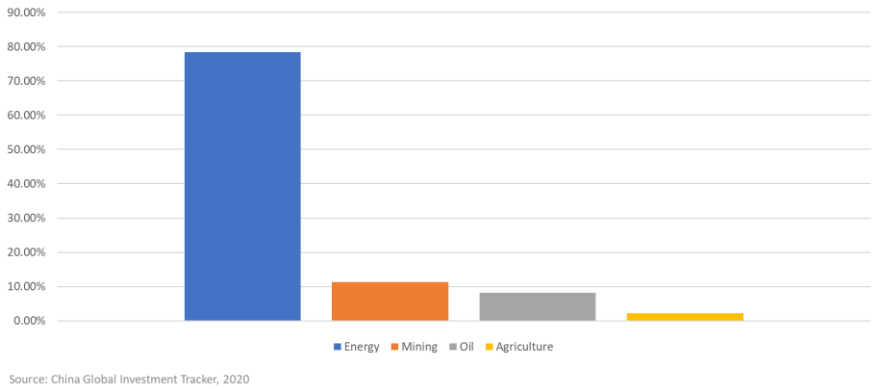
This year's investments were significantly diverse and included loans from the China Investment Corporation to Petrobras, in which the amounts diverge significantly among the sources. The China Global Investment tracker reports US$ 1,090 million, and the China-Brazil Business Council (2017, 26) reports US$ 446 million. It also included the amount of US$ 290 million by

[40] It is a private-owned company with the Chinese state participation. The company is specialized in mining and has operations over 5 continents: Africa, Asia, South America, Oceania and Europe. It is among the top world producers of several metals (CMOC, 2021).

[41] Used to produce fertilizers. With this acquisition, the company became the second-largest producer of phosphate in Brazil(CMOC, 2021).

the Shanghai Pengxin Group[42] to purchase 57% of the shares of the Fiagril agriculture, a trading firm specialized in soy and corn. (China Global Investment Tracker; China-Brazil Business Council, 22, 2017).

Chart 8: Percentage of Chinese investment per sector in Brazil in 2016



In 2016 the energy sector stood again as the highest receiver of Chinese capital. With more than 78% of investment allocated to it, China reinforced its interests in administering hydroelectric power plants in Brazil. It also showed its desire to explore alternative energy sources, as initially seen on a smaller scale in the previous year. In 2016, China's portfolio in Brazil followed the formula infrastructure plus commodities. It marked the return of Chinese capital to mining and agriculture, which had not been seen in previous years. Particularly in agriculture, China adopted a similar strategy to when it invested previously in the country, buying a trading firm rather than land. The difference is that this time, China bought a Brazilian company rather than a global company with operations in Brazil, as it was with Nidera.

[42] "Founded in 1988, Shanghai Pengxin (Group) Co., Ltd. is a private enterprise group integrating commercial real estate, mineral resources, modern agriculture, science and technology, environmental protection, financial investment and cultural industries" (Shanghai Pengxin Group, 2021).

2017:

In 2017, both datasets again converged in the total amount invested by China in Brazil. There is a slight difference of around US$ 270 million. While the China Global Tracker investment identified a total sum of US$ 8,530 million invested, the China-Brazil Business Council (2018) identified US$ 8,800 million.

Following the investments made in the previous year, State Grid bought another 40% of CPFL Energia and started to control nearly 95% of its total share. The amount invested was US$ 3,440 million (China Global Investment Tracker). The second largest investment was made by a company not seen previously in Brazil, State Power Investment (China Global Investment Tracker; China-Brazil Business Council, 29, 2018). It invested US$ 2,260 million to get the right to operate the São Simão hydroelectric power plant[43]. The Citic Agri Fund[44] made the third-largest investment in agriculture. They purchased from the American company Dow Chemical (China Global Investment Tracker; China-Brazil Business Council, 24, 2018) their corn seed production in Brazil for US$ 1,100 million (China Global Investment Tracker).

The logistic sector received other significant investments, particularly related to shipping. China Merchants Group[45] invested US$ 920 million to buy 90% of the shares of the Paranagua Container Terminal[46] (China Global Investment Tracker; China-Brazil Business Council, 25, 2018). The

[43] "The São Simão Hydroelectric Power Plant is located on the border of the states of Minas Gerais (MG) and Goiás (GO), between the towns of São Simão – GO and Santa Vitória – MG. The plant operates with 6 turbines, which generate 1,710 MW, enough energy to supply 6 million people. […] In September 2017, the plant was acquired in an auction and has as its current shareholders SPIC Brazil, Zhejiang Energy International, ZLCFB-Hong Kong International Investment Cooperation, and CPD Energy Investment Co. The operation under the new controlling group begun in May 2018, contemplating a modernization plan" (UHE São Simão Hydroelectric, 2021).

[44] "CITIC Group has developed into a large state-owned multinational conglomerate with a wide range of businesses covering finance, energy and resources, manufacturing, engineering contracting, real estate and others" (CITIC Group, 2021).

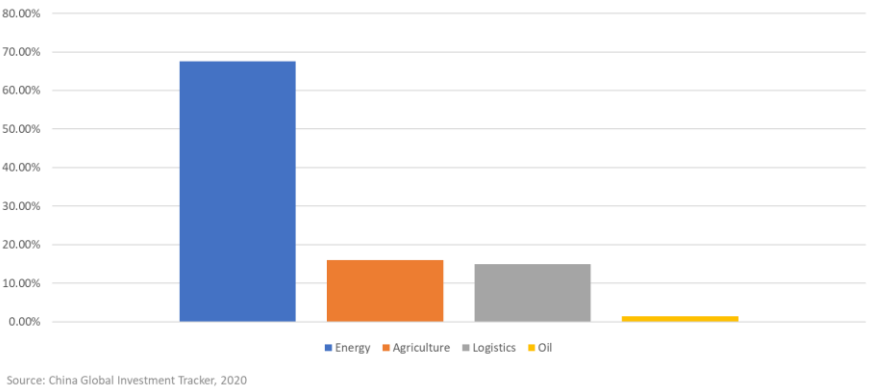
[45] "China Merchants Group is an integrated enterprise with diversified businesses. At present, China Merchants' business is focused on three core industries, namely integrated transportation, specialty finance, and integrated urban and industrial park development and operation" (China Merchants Group, 2016).

[46] the largest container terminal in South America (TCP, 2021).

majority of these shares belonged to European and American companies (China-Brazil Business Council, 25, 2018). Also, the China Communications Construction Company[47] invested US$ 340 million (China Global Investment Tracker) to build two shipping terminals, one in the north and the other in the south of Brazil, both specialized in processing grains and other agricultural items (China-Brazil Business Council, 26, 2018).

Some other minor investments were made by the mixed (private and state) owned group Hunan Dakang International Food Agriculture, which bought 54% of the shares for US$ 250 million of Belagrícola (China-Brazil Business Council, 26, 2018), a trading firm. Also, China Southern Petroleum Exploration and Development Corporation invested US$ 100 million to explore oil (China-Brazil Business Council, 28, 2018).

Chart 9: Percentage of Chinese investment per sector in Brazil in 2017



In 2017 Chinese investment reproduced investment patterns seen in former years, such as investments in energy and commodities (oil and agriculture). However, this year's particularity is China's entrance into the logistics sectors with three major investments to build infrastructure and avoid blockades to export its commodities. It also consolidated the decline of China's interests in Brazil's oil extraction compared to initial investments. In contrast, it consolidated the interest of

[47] "China Communications Construction Group Ltd. operates infrastructure construction businesses. The Company conducts railway engineering, metallurgical engineering, tunnel engineering, power engineering, hydraulic engineering, municipal engineering, and other projects" (Bloomberg, 2021).

the Asian country to work on alternative energy sources, as they purchased another significant share of CPFL Energia, which besides hydroelectricity, has an extended portfolio of wind, solar, and biomass energy production.

2018:

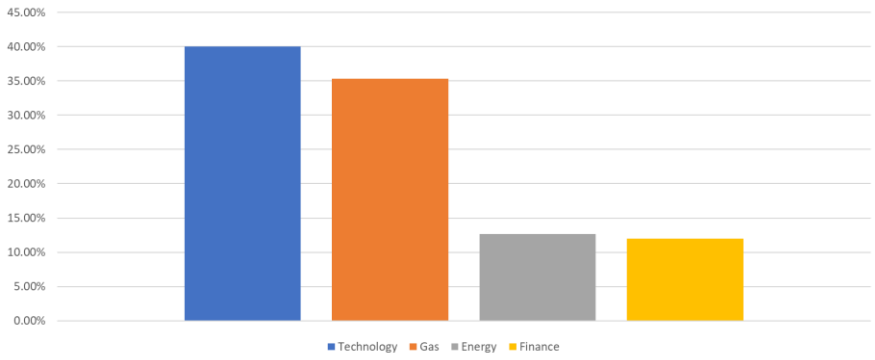
For 2018, both sources identified a significant decline in China's investment in Brazil. However, they diverge on the total sum of Chinese capital invested. While the China Global Investment Tracker identified US$ 1,790 million, the China-Brazil Business Council (2019) identified US$3,000 million. The reduction happened because of one main factor: the near-to-total absence of investments from state-owned enterprises. The main reason for the divergence relates to information sent directly from State Grid to the China-Brazil Business Council about investments in Brazil that year, which the China Global Investment Tracker did not account for. These investments were not in new projects but for the maintenance of existing projects (China-Brazil Business Council, 36, 2019).

In the absence of state-owned capital, private companies led the amount invested. Didi Chuxing[48] bought 99Taxi, a private transportation phone app, for US$ 600 million (China Global Investment Tracker; China-Brazil Business Council, 31, 2019). The second major investment was made by Shangdon Kerui in partnership with a local firm, Método Potencial, to build a gas processing plant. The amount invested was US$ 530 million (China Global Investment Tracker; Valor Economico, 2018). China Three Gorges made the third major investment. However, it was much lower when compared to previous years. They invested US$ 190 million (China Global Investment Tracker)

[48] "Didi Chuxing ("DiDi") is the world's leading mobile transportation and local services platform. The company offers a full range of app-based services across Asia Pacific, Latin America, Africa and Russia, including taxi-hailing, private car-hailing, P2P ridesharing, bus, bikes & e-bikes, designated driving, automobile solutions, delivery, freight and logistics, community group-buying services and financial services" (Didi Chuxing, 2021).

to update and renew already existing transmission lines and power plants (China-Brazil Business Council, 35, 2019). Lastly, Tencent, a private company, invested US$ 180 million in Nubank, a credit card fintech Brazilian company.

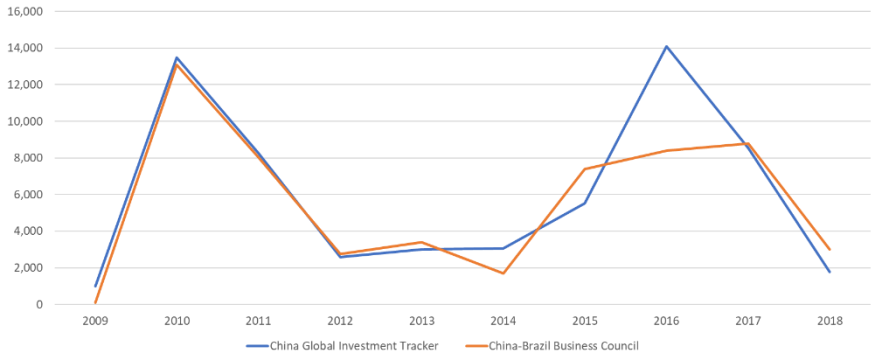
Chart 10: Percentage of Chinese investment per sector in Brazil in 2018



Source: China Global Investment Tracker, 2020

3.3 How Chinese investment changed over the years and what it means.

Chart 11: Chinese investment in Brazil 2010-2018 according to different sources (US$ million)

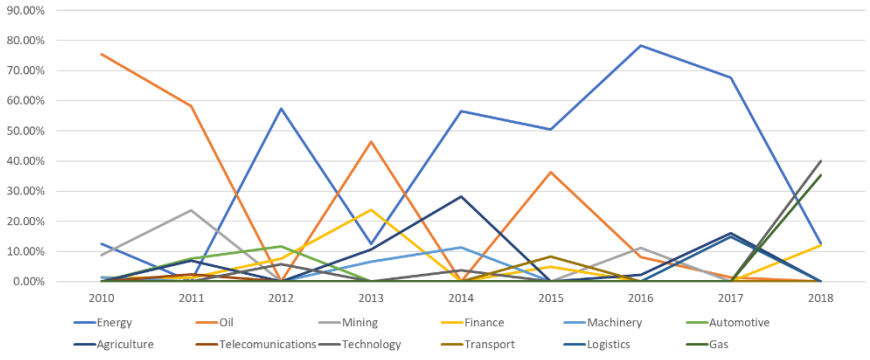


Source: China Global Investment Tracker, 2020
& China-Brazil Business Council, 2019

As illustrated in the previous section, the total amount of Chinese investment in Brazil declined over the years compared to the turning-point year 2010. However, investments did not reach levels lower than in 2010 or years before. We also could see that China allocated its capital in a vast number of sectors. However, it tended to follow a particular investment pattern of infrastructure plus commodity(es) of interest.

On the infrastructure side, energy led the way for most of the years, mainly through hydroelectric power plants and their transmission lines. Between 2016 and 2018, it was possible to see an increasing interest in alternative energy through State Grid's investments in CPFL Energia. State-owned enterprises led energy investments with little to no presence of Chinese private capital flowing into this sector. The most remarkable companies were State Grid and China Three Gorges. Together, both companies invested US$ 21,850 million (China Global Investment Tracker) between 2010 and 2018, representing 36.29% of the total amount invested by China in Brazil.

Chart 12: Sector's share of China's investment in Brazil per year between 2010 and 2018



Source: China Global Investment Tracker, 2020

On the commodity side, different from what we saw in infrastructure, capital flowed through different activities and once again, state-owned enterprises were predominant. If we were to rank investments in commodities per amount invested, we would see oil in the first place, mining in the second, and agriculture in the third. The China Global Investment Tracker estimates that the Asian country invested US$ 13,690 million in oil in Brazil between 2010 and 2018, representing 22.74% of the total invested. Although all the companies that joined this sector were state-owned, we can not see "main actors[49]," as was the energy sector's case. Investments in oil came from companies specialized in oil extraction and investment banks. They were present in five out of the nine years analyzed.

[49] I.e. State Grid and China Three Gorges.

Mining received US$ 4,650 million (China Global Investment Tracker), 7.72%% of the total investment. However, China was present only in three projects in these nine years (China Global Investment Tracker). Following a similar pattern to that of oil, here the present actors were all different. Nevertheless, all the companies were state-owned.

Lastly, although agriculture received less money than mining, the number of projects was higher. The China Global Investment Tracker identified six projects in this area. The total sum destined for agriculture was US$ 3,280 million (China Global Investment Tracker); 5.45% of the total. Investments in agriculture had some particular characteristics and events: 1) The first investment made in Brazil by the Chong Qing Grain Group back in 2011 (China Global Investment Tracker, China-Brazil Business Council) still without generating any gains. The company bought land to grow crops, but due to local regulations that forbid foreigners to own lands for this purpose, they remain unable to move forward with the project. 2) Two of the most critical investments resulted from a global acquisition of major western trading companies, Nidera and Noble Agri (China Global Investment Tracker, China-Brazil Business Council). 3) Connecting to the two last points, China adopted a particular strategy to avoid agricultural legislative barriers. Besides Nidera and Noble Agri, the Asian country purchased other local trading firms. In that way, although they do not have access to land, they exercise substantial influence over landowners as they can define conditions for capital and seed provision, assuring they will have access to Brazil's agricultural production.

Another sector that has particular importance for this chapter's analysis is logistics, which to some extent, falls under infrastructure. In 2017, China bought 90% of Paranagua Container Terminal and TCP logistics, which administers the terminal. By doing this, China now controls the largest container terminal in South America and a specialized company in solving import-export

regulations. Also, through China Communications Construction (state-owned), the country built two shipping terminals specializing in processing grains and other agricultural items (China-Brazil Business Council, 26, 2018) with strategic locations, one in the north the other in the south of Brazil. Considering these investments, China lowered the local blockades and strengthened their capability to access their commodities of interest and export their products to Brazil.

Getting back to our initial enquiry about the nature of the China-Brazil relationship, what was discussed so far in this chapter provides some insights. There are some characteristics favourable for both sides – south-south cooperation and dependency theory; however, those associated with dependency seem predominant.

Looking *only* at foreign direct investment and considering critical aspects of south-south cooperation such as peaceful coexistence, non-intervention in foreign countries, technical cooperation, and nationalization of key industries, China seems to fulfill only two of these aspects. As pointed out by former scholars, Chinese investment is not associated with strong conditionalities, giving a certain political autonomy level for the recipient country. China also does not pose a threat to the peaceful relation it has with Brazil. However, looking at the other aspects, it is possible to question how much cooperation is associated with China's activities in Brazil.

As previously mentioned, China stands as the second-largest energy provider in Brazil, exerts significant influence on the agricultural sector, and is present in some oil extraction projects. These factors raise doubt about whether China controls key industries in Brazil. It is also possible to wonder how much technical cooperation is present in this relationship, as China seems to invest little to nothing in Brazil's industrial development.

By looking at the foreign investment data, it is possible to note that, although China does not impose heavy conditions on its capital provision to Brazil, it does create conditions for maintaining

strong commodity export sectors. Assuring investment and materials through its trading firms to agriculture incentivizes Brazil to keep a strong agricultural sector. It also reinforces this process by investing in shipping terminals specialized in processing agricultural-related products.

To give a dimension of the relevance of the agricultural sector and what China's presence on it can mean, in 2019, soy ranked in the first position of Brazil's general exports, with China buying 74% of the total (Ministério do Desenvolvimento, Indústria e Comércio Exterior). It is possible to see a similar dynamic in oil. The product stood in the third position in Brazil's exporting ranking, with China buying 64% of the total (Ministério do Desenvolvimento, Indústria e Comércio Exterior).

Heavy investments in commodities and infrastructure and the purchase of these commodities are closely related to the dependency theory argument. Unlike the multinational companies from the United States and some European countries, China does not solely invest to repatriate the profits later. China's investment in Brazil seems to align with its Belt and Road initiative (which is not formally present in Brazil) to assure the provision of commodities to feed its growing population, sustain its internal growth and for them to sell their industrial production.

Looking at foreign direct investment in energy from China in Brazil, the tensions between south-south cooperation and dependency get denser. On the one hand, as seen with the voluminous amounts invested in Energy, China became one of Brazil's energy sector most important players. Two main points make a stronger case for the dependency argument, 1) these investments may be solely for avoiding barriers on accessing their commodities of interest, as energy provision is a vital component for a well-functioning economy, 2) China now controls not only vital industries in Brazil but also a significant share of what allows vital industries (and any other kind of business) to operate (energy provision). On the south-south cooperation side, these are long-term investments. The benefits they generate will remain in the country even if China decides to leave,

especially when China invests in building new structures, such as dams or transmission lines. A more detailed analysis of China's activities in the Brazilian energy sector, looking beyond foreign direct investment data, may enlighten the nature of China's activities in Brazil.

Although it might not be China's intention, the dynamics discussed in this chapter seem to create more favourable conditions to maintain Brazil's heavy dependence upon its commodities and give the country fewer incentives to advance its industrial production. With China being the primary buyer and the leading capital provider of Brazil's main export items by far, it is also possible to wonder how much influence the Asian country has over Brazil's general economic growth.

Conclusion:

In this chapter, this project mapped and identified some patterns associated with China's investments in Brazil. The evidence provided by the sole analysis of foreign direct investment suggests that China's activities in Brazil are more closely related to the dependency theory argument than south-south cooperation.

The goal of the next chapter is to narrow down the research to investments in the energy sector. Can the exclusive analysis of the investments made in energy provide more insights on China-Brazil relations? The next chapter aims to go further than analyze only foreign direct investment data. It aims to verify if the energy sector is only being used to avoid blockades or if it is possible to identify some aspects of south-south cooperation (e.g. technical cooperation).

Chapter 4: Energy

In the last chapter, this project analyzed the general foreign direct investment coming from China to Brazil. The chapter was able to identify a particular investment pattern through the years characterized by capital allocation into infrastructure and one or more commodities of interest. By

briefly looking at trade data, this work also identified that China is the most substantial buyer of the commodities it invests in. These factors led us to the preliminary conclusion that dependency strongly characterizes China-Brazil relations. However, this work identified that the significant investments allocated to infrastructure were in the energy sector.[50] This particular sector blurs the tensions between south-south cooperation and dependency.

On the one hand, there is a strong case for the dependency argument, as China's state-owned enterprises now control a significant share of Brazil's energy sector. On the other hand, there is also a strong case for the south-south cooperation framework, as any infrastructure China built or modernized in Brazil will remain in the country even if they leave. This chapter aims to look at China's activities in this specific sector – energy – to verify if new understandings about China-Brazil economic relations arise.

For this chapter's purpose, this project will analyze the activities of the two prominent Chinese state-owned firms that are part of the Brazilian energy sector: State Grid and China Three Gorges. The reason for choosing State Grid relies on the fact that the company has several investments in all three stages[51] present in Brazil's energy market; Although China Three Gorges only has activities on the generation stage, it holds significant energy sources in Brazil.

The first reason for this choice is methodological. Can the different levels of analysis of this project's phenomena of interest - China-Brazil economic relations - reveal different results or new features about the nature of this relation? In other words, if we move the analysis away from looking at macro data (foreign direct investment) to looking at the specific activities of Chinese

[50] Here discussed as electricity generation, transmission, and distribution.

[51] Brazil's energy sector is deviated among three different stages: generation, transmission, and distribution (defined by the presidencial decree number 2655 and regulated by the Brazilian Electricity Regulatory Agency). The first stage refers to the sources of energy the country has; the second refers to the transmission lines that transport the energy from the generation source to the distribution firms; the third refers to the firms responsible for delivering the energy to residencies, business and industry.

firms in Brazil, does it change the perception that China-Brazil economic relations tend towards the establishment of dependency? As China invests abroad through its state-owned enterprises, this project also expects to reveal *how* or *if* this kind of company interfered in creating dependency or cooperation.

The second reason pertains to the lack of studies concerned with understanding the impacts of having foreign state-owned enterprises controlling a significant share of a country's energy sector. Most dependency studies often pay attention to macroeconomic movements (e.g. foreign direct investment and trade) related to the manufacturing and commodities sector. However, these same studies lack the analyses of what it means for a peripheral country to have its energy generation, transmission and distribution controlled by foreign firms. Understanding the meaning of this phenomenon is vital as the energy sector is one of the bases to maintain the contemporary economic model of most countries. Among a handful of other factors (such as a workforce), industries, businesses and governments can not operate without energy. Thus, understanding China's activities through its state-owned enterprises in Brazil's energy sector is vital to understanding both countries' kind of relations.

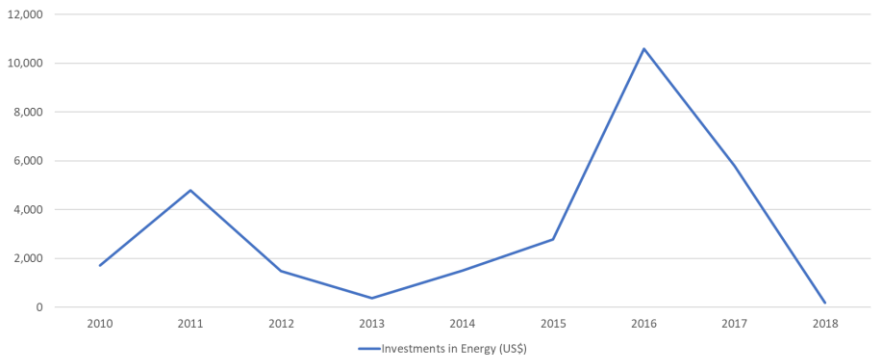
Lastly, the choice for the energy sector makes sense in the light of the countries this work is looking at. Between 2010 and 2018, China invested the largest share of its capital into Brazil's energy sector[52]. The China Global Investment Tracker estimated an amount of US$ 29,160 million. To exemplify the dimension of the Asian country's investment in Brazil's energy sector, looking at the entire region - including Brazil - investments in the energy sector accounted for nearly 53% of the total (China-Brazil Business Council, 2019, 25). Excluding Brazil from the picture, investments in the energy sector fall to 36%, and mining takes first place, with 51% (China-Brazil

[52] Followed by oil (US$ 13.690 million) and mining (US$ 4,650 million) (China Global Investment Tracker).

Business Council, 2019, 26). The primary reason for this amount of invested capital is the nature of the energy sector. Whether building new dams or installing transmission lines, the whole process requires significant amounts of capital. For instance, the smallest hydroelectric powerplants built by China Three Gorges - Cachoeira Caldeirao and Santo Antônio do Jari - cost US$ 130 million and US$ 250 million each (China Global Investment Tracker). State Grid invested US$ 970 million to build the transmission line responsible for transmitting the energy from the Belo Monte hydroelectric power plant to the rest of the country.

Out of the US$ 29,160 million invested in energy, China designated at least US$ 20,420 million to the hydroelectric sector[53]. The country partially allocated the other US$ 8,740 million to the hydroelectric sector, alternative sources of energy, such as wind and solar, and distribution firms (China Global Investment Tracker). The distinction of how much of these US$ 8,740 million was allocated to each activity just described is not possible as State Grid used it to purchase a single company, CPFL Energia. In contrast with other sectors such as oil and agriculture, which received investments unevenly through the years, China consistently invested in the energy sector (see chart 13).

Chart 13: China's yearly investments in Brazil's energy sector (US$-million)



Source: China Global Investment Tracker, 2020

[53] These investments include amounts used to build transmission lines connected to hydroelectric plants.

2018 had a significant decrease in energy investments. It was aligned not only with a significant decrease in Chinese investment in all other sectors but also with a generally lower investment rate in Brazil. The explanations around this range from the trade disputes between the United States and China to being an election year in Brazil, which had a candidate (and winner) with a strong anti-China rhetoric.

Unlike the third chapter, where this work mainly relied on the China-Brazil Business Council and the China Global Investment Tracker, this chapter will rely primarily on both companies' annual reports. This choice relies on the fact that the two first sources provide only general investment information. In contrast, in this fourth chapter, the intention is to understand the specificity of China's activities in the energy sector in order to verify signs of dependency creation or south-south cooperation.

Finding information about China Three Gorges was not challenging as the Brazilian holding company's website provided all the reports needed. State Grid, on the other hand, was more challenging. The website of the Brazilian holding firm does not work[54], making the access to information limited. To overcome this barrier, this project found two main solutions: 1) the major company where State Grid has its main activities on the generation and distribution stages - CPFL Energia - has its own annual reports. Thus, this project will limit the analysis of the company's presence in these two stages to CPFL Energia activities. 2) The company posts pieces of information about its presence in the transmission stage on its official social media accounts (see Figure 2). Thus, this project will use their Instagram posts as both an actual source of information

[54] This was written on 2021-03-04. This project tried to access the company's website (https://www.stategrid.com.br/) on a weekly basis since 2020-08 but it did not work. The website address used is the one shared by the company in its corporate profiles on social media such as linkedin, twitter, and instagram. It also tried to contact the company through corporate emails, direct messages on social media, and phone calls but no response was given to the date.

and as an initial step to explore more information about specific investments when available. This method's evident weakness is that it misses the complete information about its investments in the transmission stage. Also, as annual reports are usually directed to investors and government agencies, the accuracy is higher than social media posts for the general public.

Figure 2: Belo Monte Transmission Line extension retrieved on 2021-03-04 from State Grid Brasil's Instagram account.

Source: State Grid Brasil Instagram account. @Stategridbrasil https://www.instagram.com/p/CKhcbQPFSLd/?utm_source=ig_web_copy_link

4.1 - State Grid - CPFL Energia: Generation and Distribution.

This section will focus on the activities of CPFL Energia. The reason for this choice relies on the fact that the company received nearly one-third of all capital China designated to the energy sector, and this capital came from a state-owned enterprise, State Grid (China Global Investment Tracker). Also, on the energy generation side, CPFL Energia has a diversified portfolio and has activities in hydroelectricity, wind farms, biomass, and solar panels. On top of that, the company also has a significant presence in energy distribution, being the second-largest player in Brazil, with 14% of the market share (CPFL Energia annual report 2018). All these reasons together make the company an interesting case to investigate China's presence in Brazil. In addition to the sources already used

in the previous chapters, i.e. China Global Investment Tracker and the China-Brazil Business Council, this section will draw data from the annual reports released by CPFL Energia.

As pointed out above, the energy sector was the leading investment receiver, mainly in hydroelectricity. Other forms of alternative energy, such as eolic[55] and biomass[56], also received considerable amounts. Although companies like BYD, China Three Gorges, and Sinomach invested in non-hydro alternative energy development, it was small compared to the capital invested by State Grid through the acquisition of CPFL Energia. While BYD, China Three Gorges, and Sinomach invested a total of US$ 390 million (China Global Investment Tracker), State Grid invested US$ 8,350 million to acquire 95% of shares from CPFL Energia (China Global Investment Tracker). Because of CPFL Energia's portfolio diversity, it is not possible to say how much money the company allocated to each form of energy or each stage.

Lastly, energy companies are complex and often have many branches. This complexity comes from the fact that a single entity has activities in the different stages of the energy market. For example, under its distribution arm, the CPFL Energia has four branches[57]; under its services arm, it has six (CPFL Energia annual report 2018, 34). The same happens to all other sectors the company is in. This project will refer to all of them as "CPFL Energia."

4.1.1 Distribution.

CPFL Energia is relevant to understand how China operates in Brazil, not only for being a significant receiver of Chinese investment but also for being the second-largest player in the

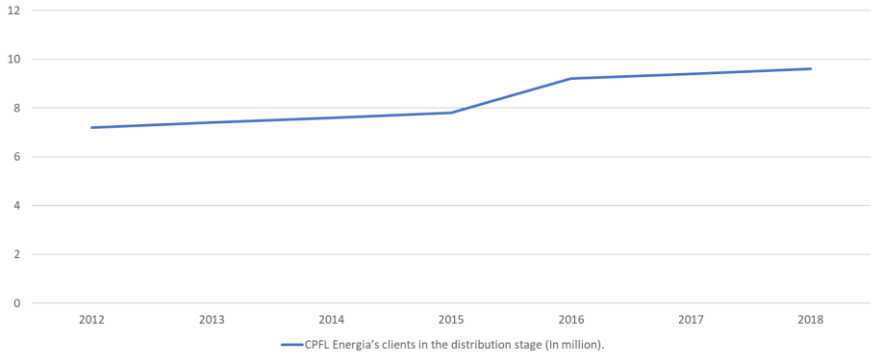
[55] Wind energy generation.

[56] Most of biomass energy produced in Brazil comes from the reuse of residues from the industrial processing of sugarcane (CPFL Energia, 2019).

[57] 1) CPFL Paulista, responsible for providing energy to 234 municipalities in the countryside of Sao Paulo state; 2) CPFL Piratininga, responsible for providing energy to 27 municipalities in the countryside and coast of Sao Paulo. 3) CPFL Santa Cruz responsible for providing energy to 39 municipalities in the countryside of Sao Paulo, 3 municipalities in the countryside of Parana, and 3 municipalities in Minas Gerais; 4) RGE, responsible for providing energy to 381 municipalities (CPFL Energia annual report, 2018).

distribution sector. With its five distribution arms, the company provides energy to 9.6 million clients[58] standing as the second-largest energy provider in Brazil with 14% of market share (CPFL Energia annual report 2018, 26). The distribution activities are concentrated primarily on four states[59], São Paulo, Rio Grande do Sul, Minas Gerais, and Parana (CPFL Energia annual report 2018, 26). This is crucial because, as this project will discuss later, these are critical industrial areas. Some have the highest populational density in Brazil, meaning that State Grid can directly affect Brazil's industry, business relations, and households.

Chart 14: CPFL Energia's clients in the distribution stage (In million).



Source: CPFL Energia annual report 2018

In chart 14 above, State Grid's presence did not seem to influence the number of clients that CPFL Energia has. In fact, the major increase of 16.47% seen in 2016 - a jump from 7.8 million to 9.2 million - was due to the purchase of a distribution firm in Rio Grande do Sul (CPFL Energia annual report 2017, 83). This transaction took place in 2015, a year before the Chinese firm bought the majority of shares of the Brazilian company.

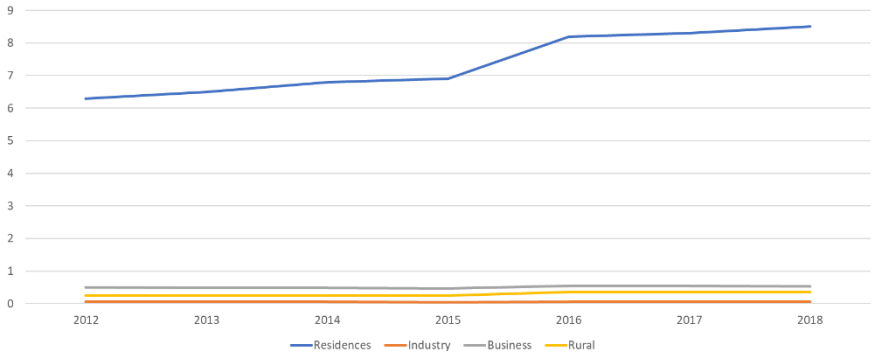
The vast majority of clients from CPFL Energia are regular residences[60]. In 2018, the company provided energy to 8.5 million residences, representing nearly 90% of its total customers (CPFL

[58] In this context, "clients" are not the same as "people". Clients refer to the number of buildings the company is responsible for, which may include business, industries and households.
[59] Brazil has a total of 26 states and 1 federal district. In total the country has 27 federative units.
[60] Households.

Energia annual report 2018, 26). According to the Brazilian Institute of Geography and Statistics[61], in 2018, Brazil had 71 million residences, meaning that CPFL Energia was responsible for providing electricity for 12% of all Brazilian households.

Other than residences, the three major CPFL Energia clients are industry (0.058 million), business (0.53 million), and rural areas (0.36 million). Although when compared with residences they look insignificant, when comparing the data within each subsection, it gives us some interesting insights.

Chart 15: CPFL Energia's clients per sector (In million)



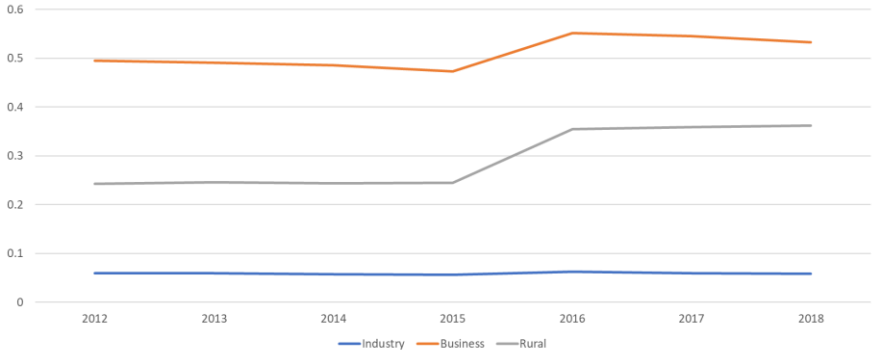
Source: CPFL Energia annual report 2018

Starting with business, as with most other categories, the spike in energy distribution seen in 2016 can be accounted to the acquisition of a new distribution firm. In 2018, the company was responsible for providing energy to 0.53 million businesses. As previously mentioned, it might seem irrelevant compared to the total number of customers the company is responsible for - 5.47% - however, comparing it to the total number of businesses Brazil had in 2018 - 1.7 million (Brazilian Institute of Geography and Statistics) - we can interpret this data differently. Looking at Brazil's territory, CPFL Energia was responsible for providing energy to 31.17% of all Brazilian businesses. We can note the same with the industry. This segment represents only 0.60% of the

[61] Instituto Brasileiro de Geografia e estatística (IBGE).

total customers of the company. However, the company provides energy to 18.77% of all industry in Brazil.

Chart 16: CPFL Energia's clients per sector excluding residences (In million).



Source: CPFL Energia annual report 2018

Although CPFL Energia distributes energy to only four states, it is possible to explain the proportions presented above as some of these states concentrate most of the country's population, industry activity and business. For example, Sao Paulo concentrates nearly 29% of all business in Brazil (Brazilian Institute of Geography and Statistics), and Minas Gerais concentrates nearly 12% (Brazilian Institute of Geography and Statistics). When looking at the number of industries, all the four states that CPFL Energia distributes energy to ranks among the top five in the number of industries. Altogether, they represent 57% of the country's total industry (National Confederation of Industry[62]).

Going back to the theoretical debate this work engaged with, the analysis of the distribution arm of CPFL Energia provides new possibilities to look at the China-Brazil economic relations that the simple analysis of foreign direct investment and trade patterns was not able to. If south-south cooperation is what better explains the relations between the two countries, then out of the analysis of the distribution sector, this project would expect to conclude that China's presence in Brazil is,

[62] Confederação Nacional da Indústria (CNI)

overall, increasing the South American country autonomy by increasing technical cooperation and assisting on fortifying key local industries. On the other hand, if dependency explains the relations between both countries, then it would expect a decrease in Brazil's autonomy and an economic development strategy aligned to China's interests. Additionally, this project would see Brazil not being able to sustain its own economic growth and improving its economic results only as a reflection of China's activities.

On the one hand, there is an apparent factor that points in the opposite direction of south-south cooperation. A state-owned enterprise of a foreign country controls not only the distribution of energy to millions of households in Brazil but also is responsible for nearly one-third of the country's business and close to one-fifth of the country's industry. Although there is no specific argument from a south-south cooperation perspective about the energy sector in the current literature, it is possible to relate this factor with the prescription these scholars make about the nationalization of key industries (Harris and Arias, 2016, 530). Although China's presence in Brazil's industry is not high enough to make a clear dependency argument, its control of a significant part of the energy provision for Brazil's industry thus of a vital resource to sustain the country's economic activity points to a direction where south-south cooperation is not so evident. It is also possible to connect the analysis of the distribution arm of CPFL Energia to the debate present in some of the dependency theory literature about the existing tension between dependency relationships and sovereignty (Blaney, 1996). It helps to undermine the idea that there is a horizontal relationship between China and Brazil, as some scholars (DeHart, 2012; Veddel, 2018) suggested. The analysis of State Grid's distribution activities through CPFL Energia shows us that the China-Brazil relationship is likely vertical, with China in a better position. This project finds evidence that there are flaws linked to the idea widely diffused that states are self-governing,

autonomous and independent entities. China controlling the energy provision for a significant part of the Brazilian economic activities points to clear hierarchies and that probably some states are autonomous (China) while others (Brazil in this case) are not.

4.1.2 - Generation

Unlike the distribution sector, where the tensions between south-south cooperation and the dependency theory were more visible, it gets blurred in the generation sector. After acquiring CPFL Energia, State Grid did not promote any breakthrough change - most of its assets remained the same. As we will see in this chapter, Brazil's reliance on CPFL Energia generation, in fact, decreased through the years. This might sound like a counterargument to the dependency theory; however, this project also does not find south-south cooperation evidence.

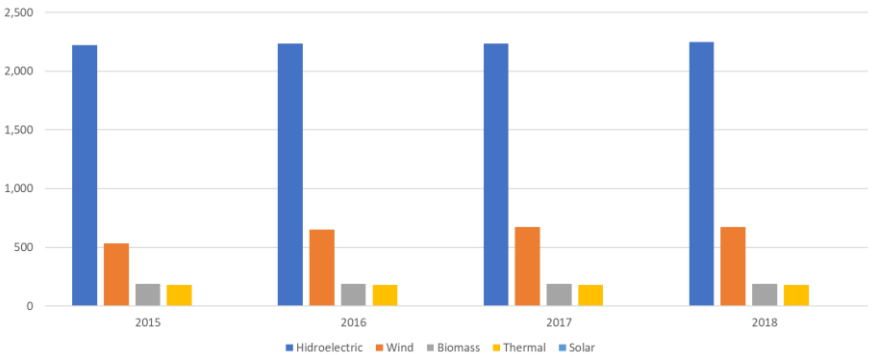
The generation arm of CPFL Energia stands as the fourth largest private energy producer in Brazil (CPFL Energia annual report 2018, 21). The company has a diversified portfolio of energy production and separates it into two main fronts: Its hydroelectric power generation[63] and other renewable sources. The company counted in 2018 with 8 hydroelectric plants, 42 small hydroelectric plants, and 6 hydroelectric generating plants (CPFL Energia annual report 2018, 24). On the other renewable sources side, the company had 45 wind farms, 8 biomass power plants, 1 thermoelectric power plant, and 1 solar power plant (CPFL Energia annual report 2018, 24).

Altogether, the 56 hydroelectric projects represented 68.2% of the company's total installed power generation capacity, followed by wind energy with 20.5%, biomass with 5.8%, and thermal with 5.5%. Solar energy represented less than 1% of its total portfolio (CPFL Energia annual report 2018, 23). The only kind of energy source experiencing a steady growth in its installed capacity is

[63] The company divides its hydroelectric portfolio between: hydroelectric plants, small hydroelectric plants, and hydroelectric generating plants. The first has the highest energy generation capacity - over 30 MW - , the second stands in the intermediate position - between 5 MW and 30 MW - , and the last has the lowest energy generation capacity - between 0 MW and 5 MW.

wind. It jumped from 533 MW in 2015 to 674.6 MW in 2018[64] (CPFL Energia annual report 2018, 23). All the others remained the same.

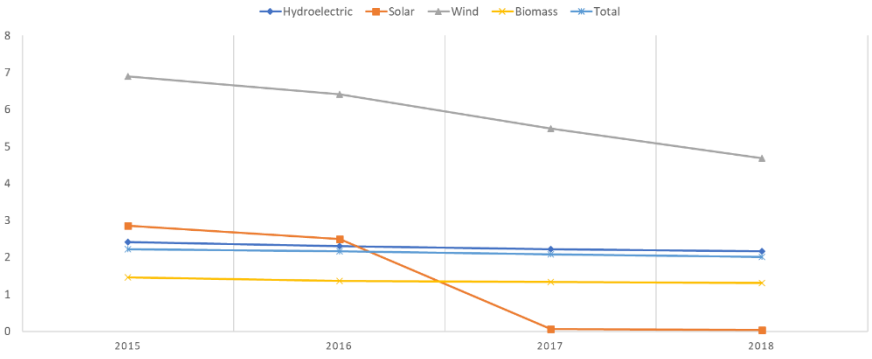
Chart 17: CPFL Energia's installed energy generation capacity per source (MW)



Source: CPFL Energia annual report 2018

Unlike the distribution sector, where CPFL Energia had high proportional participation at the national level, it does not happen in the generation sector, despite the fact that the company is the 4th highest private generator in Brazil. According to the Energy Research Company[65] (2018), Brazil had an installed generation capacity of 1,62840.08 MW, while CPFL Energia had 3,297.1 MW (CPFL Energia annual report 2018, 23), representing 2.02% of the total.

Chart 18: CPFL Energia participation in Brazil's total energy generation installed capacity (in %)



Source: CPFL Energia annual report 2018 and Energy Research Company

[64] All the sources together were capable of generating 3,256.8 MW in 2015 and 3,297.1 MW in 2018.
[65] Public company responsible for carrying out research to the Ministry of Energy.

As we can see in chart 18**,** CPFL Energia's participation in the Brazilian energy generation sector decreased through the years after State Grid acquired the company. While the national-level energy generation capacity increased, the company's remained almost the same. It was possible to see the most notable decrease in solar and wind power. While the company did open new wind farms after State Grid became the main shareholder, it was not enough to keep up with the national increase. On the solar side, the company remained with only one power plant - which was built before the entrance of China - while the national level experienced an increase of more than 8459%, jumping from an installed capacity of 21 MW in 2015 to 1797.58 MW in 2018 (Energy Research Company 2018).

The company did not significantly improve any of the current sources after State Grid purchased them. The Chinese firm only started to administrate the assets that the Brazilian firm already had. The fact that the CPFL Energia's percentage participation in generation decreased over the years shows that Brazil's reliance on China's activities to provide energy to the country also decreased. We can consider that as a point that weakens the dependency argument. However, it is not possible to see any significant sign that points towards south-south cooperation, as there are no apparent technical cooperation aspects, nor any influence on the country's development (which could be different if State Grid started to heavily invest in CPFL Energia clean energy's sources, for example).

4.1.3 State Grid: Transmission.

State Grid's activities in the transmission stage are probably where the characterization between south-south cooperation and dependency becomes more complicated. As for the other stages, Brazil clearly over relies on China's infrastructure investments to expand its access to energy, which favourably argues to dependency. On the contrary, State Grid's operations in the Brazilian

transmission lines also hold favourable aspects to south-south cooperation. First, the structures the company is building will remain in Brazil even if they decide to no longer operate in the country; second, State Grid is implementing new technologies in the Brazilian transmission lines.

As discussed in this chapter's introduction, the information about State Grid's operations on the transmission stage is not clear. The company has some minor transmission operations under the CPFL Energia portfolio. The investments were in the transmission stage's two fronts: the transmission lines themselves and the substations responsible for adjusting the energy before it arrives at the distribution firms. Especially in 2018 - the last year of our time frame - the company won the concession in two new projects, expanding its operations to the country's north (CPFL Energia annual report 2018, 25).

This project tracked other 17 transmission companies fully operating under State Grid Brazil Holding and 5 with shared ownership (see the complete list on appendix) (State Grid, 2021[66]). The company currently holds 15.700 kilometres of transmission lines through 14 states, representing 10% of Brazil's total transmission lines (State Grid, 2021[67]). For the purposes of this work, it will not go through all investments. Instead, it will focus on the ones of most relevance, defined by the amount invested and its extension.

A significant State Grid investment in transmission lines was the one made in Belo Monte Transmissora de Energia S.A. As the major shareholder of the project, State Grid (51%), in partnership with other two Brazilian state-owned companies, Eletrobras (24.5%) and Furnas (24.5%),[68] won the contract to build the transmission line that connects the Belo Monte

[66] Retrieved on 2021-03-10 from https://www.instagram.com/p/CKFMAZ9FI3P/?utm_source=ig_web_copy_link
[67] Retrieved on 2021-03-10 from https://www.instagram.com/p/CKFMAZ9FI3P/?utm_source=ig_web_copy_link
[68] Belo Monte Transmissora de Energia S.A. 2019 Financial Statements, p. 23

hydroelectric power plant from the north of Brazil to the country's southeast. The transmission line has 2,076 km and passes through 4 states[69] (Belo Monte Transmissora de Energia, 2021).

Figure 3: Map representation of the transmission line built by Belo Monte Transmissora de Energia.

Belo Monte Transmissora de Energia, 2021 retrieved from https://www.bmte.com.br/the-company/ on 2021-03-09

Another significant investment was the one made in Xingu Rio Transmissora de Energia S.A. The project was also developed to drain the energy of the Belo Monte hydroelectric power plant through Brazil. It is longer than the first-mentioned project; it has 2.539 km (State Grid, 2021[70]) and passes through 5 states[71].

These projects are of particular importance to Brazil as the Belo Monte hydroelectric power plant is the largest in the country, with an installed capacity of 11,233.1 MW (Norte Enegia, 2021). In other words, State Grid operates the transmission lines responsible for transmitting the energy generated by the major country's energy source. It is essential to mention that these projects meant the implementation of "unprecedented technological advances for the country" (Belo Monte Transmissora de Energia, 2017). These were the first transmission lines in Latin America to use

[69] Pará, Tocantins, Goiás, and Minas Gerais.
[70] Retrieved on 2021-03-10 from https://www.instagram.com/p/CKzd049FXNC/?utm_source=ig_web_copy_link
[71] Pará, Tocantins, Goiás, Minas Gerais, and Rio de Janeiro.

the ±800 kV Ultra High-Voltage Direct Current, which is more economical for long-distance energy transmission (Belo Monte Transmissora de Energia, 2017).

A brief look at State Grid operations in the transmission stage shows how the activities that distinguish between south-south cooperation and dependency are not always easily identifiable. In fact, with the transmission lines, they seem to overlap. On the one hand, Brazil indeed seems to over-rely on China to build its transmission lines. This gets even clearer when the Asian country is the one to build the lines that will transmit the energy from the country's major energy source. At the same time, China is not only building transmission lines; they are implementing new technologies in Brazil. Even if the aspects of dependency are more robust, some aspects of the south-south cooperation framework are notable.

4.2 China Three Gorges

China Three Gorges operations in Brazil, as was the case with the transmission lines built by State Grid, point to favourable aspects for both sides – dependency and south-south cooperation - and to some aspects which the distinction is not clear. On the dependency side, we see China's state-owned enterprises controlling a significant share of Brazil's energy generation; to the south-south cooperation side, we see investments in building new hydroelectric plants and upgrading already existing ones, even if they are operating these under concession agreements with set dates to end. The aspect that can have a dual interpretation is China's takeovers over North American and European companies. On the one hand, this could represent the weakening of western countries' influence in Brazil and Brazil's historical reliance on these countries. Consequently, it could also represent the possibility of Brazil to consider alternative development roads as its reliance on western capital is lower. On the other hand, it can simply mean the rise of a new centre in the world economy which Brazil surrounds. One centre which may propose a new development road to

Brazil and other peripheral countries, but that does not enhance the country's autonomy to consider its own aspects to achieve some sort of economic development without having to rely on the economic growth of a central economy.

China Three Gorges is the largest energy company in the world. It has operations in more than 40 countries and is responsible for operating the biggest existing hydroelectric power plant, which carries the company's name (China Three Gorges annual report 2019, 09). In Brazil, the company is the second-largest private player in the energy generation sector. It has under its portfolio 12 hydroelectric power plants and 2 small hydroelectric power plants. Besides, the company holds shares of 2 hydroelectric generating plants and 11 wind farms (China Three Gorges annual report 2019, 09). The total investment made by the company in Brazil between 2013 and 2018 was US$ 6,450 million, more than 22% of China's capital destined for energy in Brazil (China Global Investment Tracker).

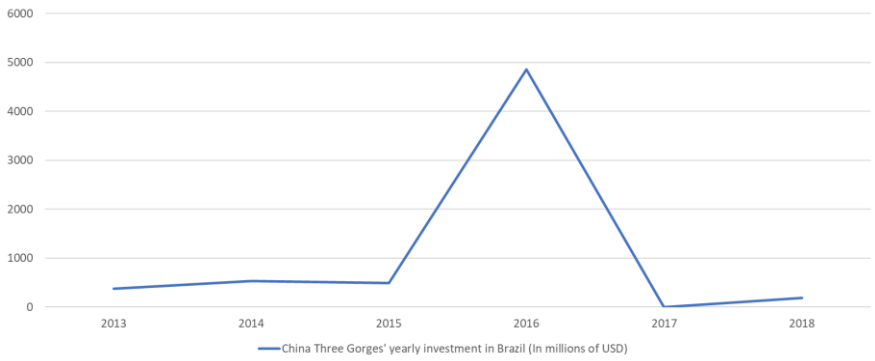
Unlike State Grid, which concentrated most of its activities under a single company (CPFL Energia), China Three Gorges operates under its own name in Brazil. The central holding in Brazil is usually the main shareholder in the company's investments. Also, different from State Grid, which had a vast portfolio of operations, having activities in most stages of the energy chain - generation, transmission, and distribution - China Three Gorges focuses on energy generation. Lastly, while CPFL Energia was a 100% Brazilian company before its acquisition by State Grid, China Three Gorges purchased foreign-owned assets. Although the company did win local concessions organized by the Brazilian government to operate some of its power plants, it also purchased foreign-owned enterprises' activities. This was the case with EDP, a Portuguese firm of which China Three Gorge bought shares of three hydroelectric power plants and 49% of shares of the company's wind farms (China Three Gorges annual report 2019, 10), and Duke Energia, an

American firm of which the Chinese company bought all operations in Brazil, including 8 hydroelectric power plants and 2 small hydroelectric power plants (China Three Gorges annual report 2019, 10).

4.2.1 China Three Gorges Brazil operations.

Since China Three Gorges started operating in Brazil in 2013, its investments and its portfolio grew substantially. By the end of 2013, the company had invested US$ 380 million in Brazil (China Global Investment Tracker), being US$ 130 million to acquire 50% of the shares of the Cachoeira Caldeirão (China Global Investment Tracker), and US$ 250 million to acquire 50% of the shares of Jari hydroelectric power plant (China Global Investment Tracker). To date, the installed capacity of both hydroelectric power plants represents 7.16% of the company's portfolio (China Three Gorges annual report, 2019).

Chart 19: China Three Gorges' yearly investment in Brazil (In millions of USD)



Source: China Global Investment Tracker, 2020

As shown in chart 19, in 2016, China Three Gorges invested the highest amount in Brazil. In that year, the company invested US$ 4,860 million (China Global Investment Tracker), being $3,660 million (China Global Investment Tracker) to start operating two major hydroelectric power plants located in the Parana River (China Three Gorges Brazil annual report, 2019) and $1,200 million to buy the operations of Duke Energy (China Global Investment Tracker). These two investments represent well China's presence in Brazil. The first reason is that it consolidated China Three

Gorges as the second major private energy generator in Brazil; the second reason is that the two hydroelectric power plants located in Parana River, Ilha Solteira and Jupiá, together are the sixth-largest hydroelectric complex in the world (China Three Gorges Brazil annual report, 2019). Locally, Ilha Solteira is the third major plant. Alone, the Parana River complex represents 60% of the company's installed capacity in Brazil with 4,995.2 MW (China Three Gorges Brazil annual report, 2019, 84). On the national level, it represents 3.06% of all generation installed capacity - which is higher than all CPFL Energia sources combined.

The other major company's investments in Brazil - the acquisition of some of the activities of the Portuguese firm EDP between 2014 and 2015, and the acquisition of the North American company Duke Energy in 2016, are essential for the company's portfolio growth in Brazil but also representative of a decline of western countries presence in Brazil due to an increase of China's presence. The participation of China Three Gorges in EDP meant for the Asian company 330.7 MW of wind power installed capacity (China Three Gorges Brazil annual report, 2019, 12) and 1,292.4 MW of hydroelectric power installed capacity (China Three Gorges Brazil annual report, 2019, 12). Duke energy acquisition represented 2,274 MW of installed capacity (China Three Gorges Brazil annual report, 2019, 12). All the China Three Gorges' investments between 2013 and 2018 made the company the second-largest energy generation company in Brazil. By the end of 2018, it had 8,300 MW (China Three Gorges Brazil annual report, 2019, 09) of installed capacity, which was 5.09% of the country's total.

Unlike State Grid that invested in research and development and the modernization of its activities due to lack of compliance with Brazil's regulations, since 2017, China Three Gorges has been focusing on the modernization of its portfolio rather than its expansion. Although it has been investing in its smaller hydroelectric power plants, the most significant amounts were seen in the

modernization of the Parana River complex, where the company approved a ten years investment plan of nearly US$ 760 million[72] (China Three Gorges Brazil annual report, 2019, 50). In addition to upgrading equipment that has been used since the 1960s, the company is also expecting an increase in the demand for energy in the years to come.

The tensions between south-south cooperation and a dependency theory argument are much stronger in China Three Gorges' activities in Brazil than in the case of State Grid. There is clear evidence that Brazil over relies on the Chinese state-owned enterprise's operation to generate electricity for its population, business, and industry, favouring dependency. One could argue that Brazil's economic development reliance on foreign capital is just changing from European and North American companies to Chinese ones, as seen with Duke Energy and EDP's acquisition. One could also argue that there are implications for the country's sovereignty as a significant part of its energy is held by state-owned enterprises of a foreign country.

On the other hand, looking at China Three Gorges' activities since 2017, when it stopped its expansion in the country to focus on the modernization of its current portfolio, it is possible to note patterns relatable to technical cooperation expectations as suggested by south-south cooperation scholars. In fact, more than monetary investment, China Three Gorges reports that Chinese technicians and engineers are working with their Brazilian counterparts in modernization projects. This could be an indicator of knowledge exchange and that in the future, Brazil could be more autonomous. Also, in many of its operations, China Three Gorges operate with concession contracts, meaning that at some point, they either lose or must renew their right to operate that hydroelectric plant. This is the case with the Parana River complex, in which the company can

[72] The company divulgated an investment plan of R$ 3 billion. The conversion to USD was made considering the average exchange rate for 2019 - 1 USD = 3.95 BRL - as reported by the Brazilian Institute of Applied Economic Research (IPEA - http://www.ipeadata.gov.br/ExibeSerie.aspx?serid=31924)

operate until 2046 (Parana River report, 2018, 13). The concession contract of this particular investment does not impose any modernization to the complex, only capital to the operations and maintenance of the current equipment. Nevertheless, China Three Gorges is allocating a significant amount of money to upgrade it. The results of this modernization plan will remain in Brazil even if China Three Gorges does not renew its contract to operate this complex, adding an extra point to think about the Chinese operations in Brazil with some level of cooperation.

4.3 Discussion

Narrowing down the analysis from a macro perspective that looked at China's general investments in Brazil to specific companies' activities showed that the connections between these countries are difficult to classify between the two discussed theories in this work. The analysis of the Chinese presence in the energy sector through its state-owned enterprises - China Three Gorges and State Grid - tend to add favourable points to both south-south cooperation and dependency theory. The aspects favourable to the dependency side are more clearly visible. In fact, having more than 7% of its energy generation on the hand of foreign capital, and several portions of its residences, business, and industries relying on the distribution of this same capital owner raise the question of how much of Brazil’s economic results (and other social aspects) rely on China’s presence in Brazil. Also, it raises the question of how much of Brazil’s sovereignty is undermined by this same aspect.

On the other hand, mainly through the analysis of China Three Gorges activities and the transmission line project of State Grid, it is possible to see aspects of south-south cooperation. The companies’ investments to modernize Brazil’s energy sector, even though they operate it under a concession agreement and are not required to do so, provide evidence related to technical cooperation as suggested initially by south-south cooperation scholars. The analysis of the energy

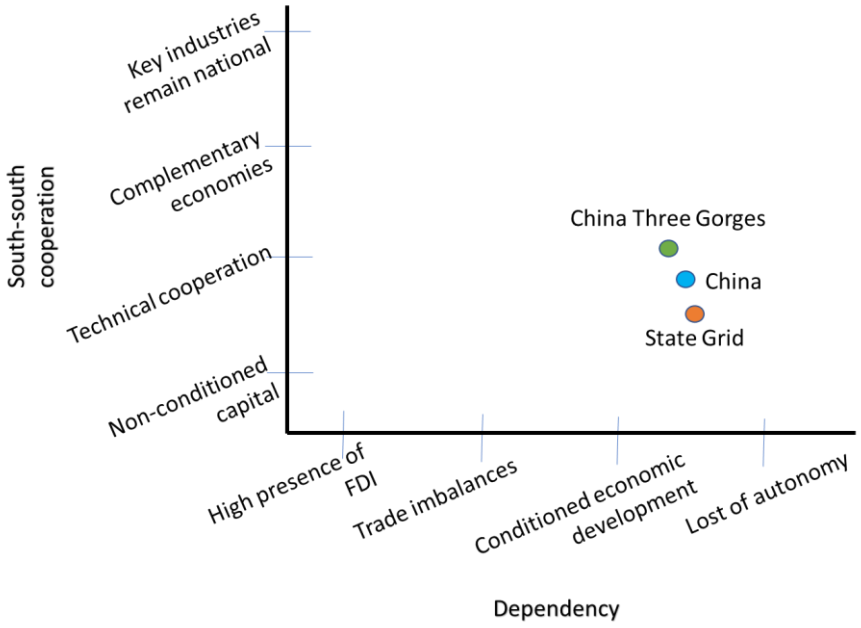
sector also points to the presence of long-term capital coming from China. This is to say that all investments made by the Asian country in this sector will remain in Brazil even if they decide to leave.

It is also essential to understand how these investments connect to what seems to be China's broader strategy in Brazil. As discussed in Chapter 3, the country seemed to follow a pattern of investments in commodities and infrastructure. China would follow this strategy to avoid blockades in having access to its commodities of interest. This would strengthen the dependency argument. While it might still be true, and China's intention is not to cooperate but instead get access to the country's commodities, China's movements spill over - as seen in the energy sector - and create favourable aspects to think about cooperation.

For this reason, China-Brazil economic relations seem to be more complex than what a pure dependency or a south-south cooperation analysis might provide. Rather than thinking of the tensions between south-south cooperation and dependency as a continuum, where the existence of one makes the existence of the other impractical, this project suggests thinking about it as an "L" diagram (Figure 3), where the coexistence of dependency and south-south cooperation is possible. However, the higher presence of one may mean the lower presence of the other.

In this diagram (Figure 3), the highest level of dependency represents the complete loss of the peripheral state's political and economic autonomy. This is to say that the foreign country's presence would be so high and of such extreme importance for the receiving country that it would not be able to make decisions without going through the central country. The highest level of south-south cooperation would be characterized by the central country's capital provision to the peripheral country; however, its key industry would remain national.

Figure 4: Classification of China-Brazil economic relations according to the analysis of China's activities in the Brazilian energy sector between 2013-2018



[73]

It shows us that China rising internationally as a new gravitational state for other countries might inaugurate new forms of dependency different from that seen with western countries, i.e. the United States and Europe, where little to no aspects of cooperation were present. In other words, although both classes converge in creating favourable dependency conditions, such as the high presence of FDI, unfavourable terms of trade for peripheral countries, and to some extent, conditioned economic development, they diverge on the level of cooperation present. While in China's interaction with Brazil, we see non-conditioned capital and technical cooperation; these were features not seen when western countries were the international gravitational center.

This new form of dependency is only possible - this project argues - because of the differing nature of Chinese and western companies. While the west interacted with peripheral countries mainly through *private firms*, this project characterizes China's presence in these countries through its

[73] It is important to note that this diagram was made thinking *exclusively* of China-Brazil economic relations, and might require adjustments to think about other states relations.

state-owned enterprises. China's companies in Brazil directly represent the interest of the Chinese state. They are part of a broader China's internationalization strategy, while western companies' internationalization often is representative of their own growth interest. In connection with this factor, Chinese companies can make long-term investments (such as the ones seen in the energy sector) as it relies on the capital provided directly by the Chinese state. In contrast, private western companies face higher financial barriers.

Additionally, Chinese companies achieved a unique expertise level with China's recent economic growth. This is reflected in the investment quality they promote in Brazil. This is the case with the transmission lines built by State Grid which introduced new technologies into the country, and the modernization projects of hydroelectric power plants carried out by China Three Gorges.

This chapter revealed more than whether China-Brazil economic relations fall under the dependency or the south-south cooperation argument. It showed how moving away from an analysis of macroeconomic data - in our case, foreign direct investment and trade - and adopting a different methodology, such as looking at specific companies' activities, may provide new insights about the two countries' relations. This was only possible because the representatives of the Chinese capital in Brazil are state-owned enterprises. This is to say that these companies' analyses provided more profound insights into China's intentions in Brazil and what kind of relationship these countries are building.

Chapter 5: Conclusion

This work's initial intention was to characterize China-Brazil economic relations. This research inquiry rose from the spike of foreign direct investment from China to Brazil and the trade level between these countries after 2010. To achieve this goal, it interacted with the two main literature bodies interested in analyzing China's rise internationally: dependency theory and south-south cooperation. The first one held a skeptical view of China's presence in peripheral countries, arguing that the country was simply reproducing patterns seen in former western central countries - such as the United States and European nations – thus, shaping Brazil's economic development (and other countries in the world's periphery). The south-south cooperation scholars, on the other hand, held an optimistic view of China's growth internationally, arguing that because of the lack of conditionalities linked to China's capital provision, the country would offer to its counterparts in the periphery an alternative development road, more autonomous and without external interference. In other words, this work had an explorative goal and aimed to understand: Is China reproducing dependency patterns in its integration with Brazil?

In the second chapter, this project dug deep into the theoretical debate pertaining China-Brazil economic relations. While both sides – dependency and south-south cooperation - presented solid arguments and provided meaningful insights about China-Brazil economic relations, their work left some high importance gaps to understand the phenomena at hand. The two main gaps this work interacted with were 1) the lack of understanding about the role that China's state-owned enterprises played in the country's operations internationally (which is what represent China's presence internationally, as the country's private companies' investments internationally are of little importance); 2) the lack of studies looking at China's state-owned enterprises' activities in specific sectors, and what this kind of analysis can tell us in contrast to looking at macro

information such as the level of foreign investment or trade patterns between both countries. To cover these gaps, this work analyzed China's activities in the energy sector, specifically the activities of State Grid and China Three Gorges. This choice relied on the fact that this sector and these companies were the leading investment providers.

After establishing the relevant theoretical debate, this work moved on to its third chapter. Here this project presented the overall investments of China in Brazil and tried to identify patterns through the years. Although it may seem to contradict the project's initial goals, look at macro data was necessary for a couple of reasons: first, it gave basis to the methodological comparison this research was interested; with this chapter in hand, this project was able to compare and discuss how it is possible to achieve different results when comparing general foreign direct investment data with specifics companies' activities in specific sectors. Second, it allowed verifying if China had a broader and coordinated strategy in Brazil and how the energy sector connected to it. Related to the second point, the third chapter allowed this project to identify a particular pattern for China's investment in Brazil. The country seemed to follow the equation "commodities plus infrastructure" in its investment strategy. The most relevant commodity sectors China invested in were oil and agriculture – the second one mainly through trading firms. The most relevant sector on the infrastructure side was energy.

From the third chapter analyses, this work concluded that when looking at China's presence in Brazil through foreign direct investment data and trade patterns, the countries' relation has stronger signs of dependency than cooperation. By looking at these macro data, China seems to invest in Brazil's infrastructure only to avoid blockades and access its commodities of interest, making the recipient country dependent on both China's capital provision and China purchasing these commodities. Nevertheless, this project also identified that because of the nature of the

infrastructure sector being invested, some signs of cooperation might be present; this is to say, investments in developing a country's energetic matrix are not speculative capital, the results and benefits out of these projects will remain in Brazil even if China decides to leave. As the work moved to its fourth chapter, it started to identify what China's investment in Brazil's energy sector might represent.

The fourth chapter of this work most significantly distinguishes it from other research projects on dependency or south-south cooperation approaches. Here this project proposed a company and sector-specific analysis about China's presence in Brazil. Despite the challenges related to data precision, it was able to identify that the activities of Chinese firms in Brazil are more complex than a pure dependency or south-south cooperation analysis may provide. Looking at State Grid and China Three Gorges, it was possible to note aspects relevant for both sides.

On the dependency side, we have seen China's state-owned enterprises controlling a significant share of all the three stages in Brazil's energy sector: generation, transmission and distribution. With State Grid, this project identified that the company controls the energy provision (through CPFL Energia) 31.17% of all Brazilian businesses and 18.77% of all industry in Brazil (CPFL Energia Annual Report, 2019; Energy Research Company, 2018). This project also identified that the company is building and operating the transmission lines responsible for draining the energy of Brazil's primary source to the rest of the country. Similarly, this work identified that China Three Gorges is an essential player in the energy provision market in Brazil as it controls and operates the Parana River complex, which counts with the third largest hydroelectric plant in the country and is the sixtieth largest in the world (China Three Gorges Brazil annual report, 2019).

On the south-south cooperation side, it was possible to see that State Grid operations in building transmission lines in Brazil introduced newer technologies in the country. With China Three

Gorges, this project identified some level of technical cooperation as the company is upgrading already existing plants in the country even when it is not required to do so. The company also provided this work with a controversial point when it identified that China Three Gorges bought the operations of two western companies. This acquisition could mean a lower dependency level on western powers and thus the chance of Brazil thinking about development alternatives due to the lack of conditionalities related to China's capital; on the other hand, this could be one more sign of China's emergence as a new economic centre internationally and Brazil being on its periphery, having to rely its economic growth on its relations with China.

Having all that at hand, the questions proposed in this work "Is China reproducing dependency patterns in its integration with Brazil? If yes, does the analysis of specific companies provides insights on the characteristics of Chinese dependency?" have a more complex answer than simply "yes" or "no." There are stronger signs of dependency characteristics on China's integration with Brazil. It is undeniable that China's control over Brazil's energy sector represents an overreliance from the South American country in its relations with the Asian country. Especially because even if China does not exercise significant control over Brazil's industry, it controls what allows these industries to operate (i.e. energy provision). Although on a lower scale, some signs of cooperation are also present, such as long-term investments in building transmission lines and new plants and introducing new technologies in Brazil. This level of cooperation might be what differentiates China's rise as a new gravitational centre from its European and North American predecessors.

There are multiple paths to continue this research topic further. The first one would be to engage with a gap mentioned in the introductory chapter, which was not discussed in this project. There is still a lack of understanding of the role of Brazil's domestic players in favour or against China's presence in the country. Looking briefly at Brazil's news, it is possible to see groups conflicting

about this topic. On one side, a group represented by Brazil's president, some of its ministers and its sons (which are elected legislative representatives) frequently reinforce the anti-China rhetoric; on the other hand, it is possible to identify legislative groups such as the ruralist bench[74] arguing in favour of the country (O Globlo, 2020). As Cardoso and Faleto discussed in their work, small local groups that benefit from dependency are vital to sustaining it. Their discussion was built considering western economic centres, namely the United States. Are local groups that act in favour of China the same as that advocated in the United States favour? If not, then why it changed and how the internal political struggles impacted this change?

Additionally, now that this work identified that dependency is what stronger characterizes China-Brazil relations, there is room for comparison with former metropolises identified by the literature, such as England and the United States. What makes dependency upon these three countries original? Can we talk about different forms of dependency, or are they all the same? Does it represent any different results for the peripheral countries? These are all questions that research in this direction may be interested in answering.

China's rise as a new economic centre is a reality. The country's exponential economic growth seen in the 21st century made it as relevant as its powerful western counterpart, the United States. Understanding this new major player and its interaction with other countries is vital to have a clear picture of international relations. The analysis provided by looking at China's presence through its state-owned enterprises in Brazil and how it controls one of the most important aspects of a country's economy (energy provision) is relevant to make other peripheral countries consider what kind of development they want to have. Will they actually take an alternative development road or just change who conditions their economic growth?

[74] Free translation of "bancada ruralista"; responsible to advance large scale agriculture polices in Brazil.

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Appendix

List of transmission lines which State Grid operates in Brazil:

• ACTE – Atlântico Concessionária de Transmissão de Energia do Brasil

• Araraquara Transmissora de Energia

• BMTE – Belo Monte Transmissora de Energia SPE

• Catxerê Transmissora de Energia

• ETEE – Expansion Transmissão de Energia Elétrica

• ETIM – Expansion Transmissão Itumbiara Marimbondo

• Iracema Transmissora de Energia

• ITE – Itumbiara Transmissora de Energia

• Linhas de Transmissão do Itatim

• LNT – Luziânia-Niquelândia Transmissora

• LTMC – Linhas de Transmissão de Montes Claros

• MRTE – Marechal Rondon Transmissora de Energia

• Paranaíba Transmissora de Energia

• PCTE – Poços de Caldas Transmissora de Energia

• PPTE – Porto Primavera Transmissora de Energia

• RPTE – Ribeirão Preto Transmissora de Energia

• SMTE – Serra da Mesa Transmissora de Energia

• SPTE – Serra Paracatu Transmissora de Energia

• Teles Pires 2 – Guaraciaba Transmissora de Energia e Matrinchã Transmissora de Energia

• Teles Pires 1 – Canarana Transmissora de Energia (CNTE) e Paranaíta Ribeirãozinho Transmissora de Energia (PRTE)

• XRTE – Xingu Rio Transmissora de Energia