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China's Motivations Behind "Loan-for-Oil" Deals

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China's Motivations Behind "Loan-for-Oil" Deals

by

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Thesis

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Dedication

Dedicated to my parents, Tayyaba Awan and Altaf Awan. Also dedicated to my friends and family from Pakistan and the rest of the world. I am glad I met each and every one of you and you have touched my life in some way or the other.

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Abstract

China's Motivations Behind "Loan-for-Oil" Deals

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The University of Texas at Austin, 2014

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China has been undertaking a number of transactions with various countries referred to as "loan-for-oil" deals since 2009. In these deals, China extends a loan to a certain oil exporting country and expects loan repayments in the form of oil shipments at market prices. The aim of this thesis is to identify China's motivations behind loan-for-oil deals. This paper analyzes each of two hypotheses separately. The first hypothesis is that "If China enters into loan-for-oil deals, then it is aiming to build friendships with oil-resource rich countries to advance its objective of energy security". The second hypothesis is that "If China enters into loan-for-oil deals, then it is looking to diversify its financial investments from US treasury bills and views these deals as credible alternative investments". The paper rejects both the hypotheses based on the information discussed in the thesis: the loan-for-oil deals do not enhance China's oil linked energy security, nor are they a viable diversification from investments in U.S. treasury bills. However, by offering subsidized loans with relaxed conditions to oil exporting countries post the 2008 financial crisis, China is using these deals as an apparatus to develop friendships with oil exporting nations, thereby highlighting its interest in oil as a commodity. It can be speculated that the friendships formed as a result of these deals may contribute towards China's oil linked energy security goals in the future, however proving this conjecture is outside the scope of this thesis.

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Introduction

Today, it is difficult to imagine that China, the world's second largest oil importer, was a net petroleum exporter until 1992. Since then its increasing population and high rates of GDP growth have led to a surge in demand for oil. China is the most populous country in the world with a population of 1.351 billion as of 2012 (The World Bank , 2012). The population growth rate over 1992 is about 15.37%. China's GDP grew from $488.22 billion in 1992 to $8.229 trillion in 2012, reflecting a growth of 1,586% (China Statistical Yearbook , 2012). Increased GDP has led to an increased demand for oil. In 1992, China consumed 2.736 million barrels of oil per day and exported about 109,000 barrels of oil per day. By 2012, China consumed 10.221 million barrels of oil per day and imported 6.066 million barrels of oil per day. The oil consumption grew by 273.57 % over just two decades (BP, 2013).

The International Energy Agency defines "energy security" as the "uninterrupted availability of energy sources at an affordable price" (IEA, 2014). The biggest energy security related challenge facing the Chinese government is to secure large quantities of oil without having a drastic effect on global oil prices.

Since 1992, in order to meet its growing demand for oil, China has made various types of investments domestically and internationally. Internationally, it has bought shares in producing fields in various oil producing countries, undertaken service and construction contracts for upstream and downstream activities, been involved in projects for the construction of major pipelines for transporting oil, and acquired shares in energy-

and oil-related corporations. More recently, since 2009, China has been undertaking a number of transactions referred to as "loan-for-oil" deals. These deals are unique, as they provide subsidized loans of substantial amounts to oil exporting countries, and in return along with the repayment of the loan comprise an additional oil sale agreement that guarantees China a certain quantity of oil sale at market prices over the term of the loan. This has been a fundamental bone of contention: So long as one can acquire oil at market prices, why is there a need to subsidize loans? The aim of my thesis is to identify China's motivations behind loan for oil deals. For the purpose of analysis, I will lay down two initial hypotheses and analyze each hypothesis in turn before reaching my conclusion. The two hypotheses are:

If China enters into loan-for-oil deals, then it is aiming to build friendships with oil-resource rich countries to advance its objective of energy security.

If China enters into loan-for-oil deals, then it is looking to diversify its financial investments from US treasury bills and views these deals as credible alternative investments.

Background

This section aims to provide a background of various loans-for-oil transactions executed by China in the past few years. It will highlight the different countries with which China has entered into loan-for-oil deals, along with discussing the projects these loans were extended for. The deals are organized in order of the geographical location of the loaned countries, starting from Russia in the East and ending in Ecuador in the West. Later in this thesis, three of the deals presented in this section will be analyzed in greater detail to gauge China's motivations behind these deals by testing the hypotheses laid down in the previous section.

On 17th of February 2009, after 15 years of talks and negotiations, China entered into a loan-for-oil deal with Russia. It provided Russia a loan of $25 billion for 25 years ($15 billion to Rosneft, an integrated oil company owned by the government of Russia, and $10 billion to Transneft, an oil transporting company controlled by the Russian Government) with an oil sale agreement of 301,000 barrels of oil per day over the next 25 years (Jiang & Cinton, 2011). The $25 billion dollar loan to Russia was intended to finance an extension of the Russia Siberia-Pacific pipeline that flows towards China (Energy Daily, 2009). One year later, after the extension of the pipeline had been constructed; Rosneft started shipping crude oil via the Eastern Siberia-Pacific Ocean (ESPO) oil pipeline. The pipeline transported oil from Skovorodino to Mohe on the Chinese border (Chicago Tribune, 2014). Since then, China has entered into loan-for-oil

deals with eight countries: Angola, Bolivia, Brazil, Ecuador, Ghana, Kazakhstan, Russia and Venezuela (Jiang & Cinton, 2011).

In June 2013, China transacted a $270 billion loan-for-oil deal with Russia for a period of 25 years. In return, China was to receive 300,000 barrels of oil per day over the next 25 years as a part of the pre-sale oil agreement (Bloomberg, 2013). This deal is expected to double the amount of oil exports from Russia to China. Some reports state that Russia will decrease its oil exports to Europe, which it views as a stagnant market, and increase its exports to China, the second largest oil importer. The pre-payment of the deal was about $70 billion, which is more than Russia's current total of $54 billion net debt. The deal was signed at the International Economic Forum, and Russian President Vladimir Putin labeled the deal "unprecedented" (Bloomberg, 2013).

China has also transacted such deals with oil-resource rich African countries like Angola. In 2011, the Angolan finance minister confirmed that Angola had received loans from China totaling $9 billion for infrastructure construction purposes. Out of $9 billion, $7.5 billion were backed by oil sale agreements. In the case of Angola, China also wanted to acquire shares in various oil exploration projects. Every time the Angolan government agreed to China having access to its oil equity, China provided an extension for the repayment of the loans. These loans continued to be backed by oil sale agreements. For example, China acquired a 50% stake in Block 18 in Angola after it extended its first loan. A joint venture agreement was signed between China and Angola for the exploration of the block (Alves, 2013). Block 18 is estimated to have reserves of 750 million barrels (www.offshore-technology.com).

In May 2009, China loaned Brazil $10 billion dollars for a period of ten years. The purpose of the loan is to finance a part of Brazil's pre-salt business plan 2009 – 2013, specifically oil exploration and production activities in Brazil worth $174.4 billion (Bloomberg, 2009). Brazil has a pre-salt reservoir off its southeastern coast known as the Libra field that is estimated to have reserves of about 50 billion barrels, or about 20 percent of the oil reserves of Saudi Arabia. Pre-salt oil lies deep inside the earth below a layer of salt that is thousands of meters thick and is difficult and costly to extract. The layer of salt is further buried under layers of rocks that are thousands of meters thick and are present at the bottom of the ocean at a depth of 2,000 meters below sea-level (Forbes, 2013). Brazil in turn agreed to supply China 150,000 barrels of oil per day for the first year, and 200,000 barrels of oil per day at prevailing market prices for the next nine years (Bloomberg, 2009).

In April 2010, China entered into another deal: It loaned Venezuela $20 billion for a period of 10 years as a part of a 25-year joint-exploration agreement. In return, Venezuela agreed to sell 200,000 barrels of oil per day at market prices to China over the next ten years. The joint venture is for the purpose of upstream and downstream activities to produce crude heavy-oil in the Junin 4 block of Orinoco Belt. The project is expected to yield a total of 2.9 billion barrels of extra heavy crude oil. Initially, in 2012 the Junin 4 block was expected to produce 50,000 barrels per day, which would eventually increase to 400,000 barrels per day by 2016. Hugo Chávez, the then President of Venezuela, stated: "The relations between China and Venezuela extend from below the surface of the earth to outer space". "We're producing oil together and our satellite is out there in space.

This is a changing world in transition" (Bloomberg, 2013). This statement by the Venezuelan president demonstrates how this loan-for-oil deal enhanced Sino-Venezuelan relations and paved the way for future oil trade co-operation.

A report by Bloomberg Businessweek estimated that since 2007 China has loaned Venezuela up to $42.5 billion for various projects that were backed by oil sale agreements. Of that total, $12 billion was loaned in a short time span of 15 months during a time when it was difficult for Venezuela to borrow money from the international market due to the global recession. The loaned amount accounts for almost 25% of Venezuela's total international loans (Devereux, Forsythe, & Sanderson, 2012). The table below gives an account for the various purposes of the loans that are mostly secured by future oil sale agreements of various amounts.

(Devereux, Forsythe, & Sanderson, 2012)

Figure 1: CDB loans to Venezuela since 2007

Ecuador in 2008 had a $3.2 billion debt default due to its difficulties raising external financing. In November 2012, China lent Ecuador $2 billion dollars against oil sale agreements in the future. Chinese funds are expected to finance 61% of Ecuador's budget deficit. In return China has oil sale agreements accounting for almost 90% of Ecuador's future oil exports. "This is a huge and dramatic shift," said Rene Ortiz, a former Ecuadorean energy minister and secretary general of the Organization of the Petroleum Exporting Countries. "Never before has Ecuador committed its oil to a lender" (Financial Post , 2013). China's oil backed deals with Ecuador started in 2009, when Ecuador approached China for a $1 billion advance payment for a guaranteed supply of 69,000 barrels oil per day for the next two years (Financial Times , 2014). Although this was not a typical loan-for-oil deal, it led to many subsequent loan-for-oil deals. Note that the term "oil-backed" for these deals means that a certain quantity of oil is promised to be sold to China in the future, not that the oil serves as collateral for the loan. By April 2010, China purchased about 33% of Ecuador's total oil exports and more recently, i.e. by mid-2013, China bought about 83% of Ecuador's exported oil. The Chinese "provide financing for our country and, in exchange, we ensure sales of oil at international prices," Ecuador's then-Finance Minister Patricio Rivera told state-run TV earlier this year" (Financial Post , 2013).

From the discussion above, it is noted that China has transacted loan-for-oil type of deals with eight different resource-rich countries across three different continents in varying amounts. In the next section, China's international petroleum policy and the

structure of Chinese National Oil Companies (NOCs) and government banks will be discussed.

China's International Energy Policy

This section aims to discuss some key points of China's International Energy Policy and to describe China's major National Oil Companies (NOCs) and Government Banks. To test the hypotheses stated earlier, it is important to understand the structure of the transactions and how these loan-for-oil deals were conceived. The Chinese NOCs and Government Banks are major players in the execution of loan-for-oil deals and are directed to act in line with China's international energy policy. This section discusses the policies that led to international exploration, the government entities involved, and the structure of the deals.

Since the early 1990's, the government's key energy policy priorities have been to increase the level of imports to meet the growing domestic demand and to diversify the sources of these imports. As a result, the Chinese government has endorsed the quest for oil by the Chinese National Oil Companies (NOCs) (Speed & Roland, 2011). International exploration was initially a difficult task, as previously the NOCs were not exposed to the political risks that arose with investing abroad, and they had no experience in drilling on foreign soil (Alves, 2013). It was only at a later stage that the government devised policies that encouraged the NOCs to expand internationally (Jiang & Cinton, 2011). Today however, China has a separate section for "Strengthening International Co-operation in Energy" as a part of its Official Energy Policy.

In its Energy Policy document, China acknowledges that it cannot meet its development goals without international co-operation and is therefore aiming for closer energy ties with the rest of the world. It states that

> "For a fairly long time to come, international energy trade will remain the major way by which China utilizes foreign energy sources. China will improve policies for fair trade and optimize the trade structure, and conduct energy imports and exports in accordance with the WTO rules. It will diversify the modes of trade and comprehensively use such methods as futures trade, long-term agreements and barter trade. China will actively participate in global energy management. It will intensify exchanges and cooperation with other countries, addressing together the impact of the international monetary system, excessive speculation and energy market monopoly, thereby maintaining the stability of international energy market and energy price" (The People's Republic of China, 2012).

China also highlights three main areas for ensuring global energy security. First it emphasizes strengthening dialogue and exchanges among energy exporting, consuming and transiting countries. Second it supports mutually beneficial co-operation in international energy exploration. It calls on the developed to countries to transfer technology to developing countries for a more energy-secure world. Third, it calls for the international community to work together to maintain peace and security in the oil-exporting and oil-producing regions such as the Middle East and to avoid any geo-political clashes. In order for China to support dialogue and exchanges, it is a part of many energy-related multi-lateral organizations such as the World Energy Council, International Energy Forum and G-20 (The People's Republic of China, 2012).

I. STRUCTURE OF CHINA'S NATIONAL OIL COMPANIES (NOCS):

Initially, China's important petroleum-related decisions were centralized at the federal level, and local governments and petroleum corporations had little or no influence in centralized decision making. In the early 1980's, under reforms, the Chinese government abolished line ministries for petroleum corporations, decentralized petroleum decision making and instead formed National Oil Companies that were responsible for petroleum-related decisions and the profit and loss associated with them (Kong, 2010). The main objective of forming these NOCs was to introduce competition amongst them for more efficient economic results that would lead to greater tax revenues for the State (Jiang & Cinton, 2011). Although the current structure of NOCs is not completely autonomous from the State, it has led to greater efficiency and profitability (Kong, 2010).

There are three major NOCs: China National Petroleum Corporation (CNPC/PetroChina), China Petroleum & Chemical Corporation (Sinopec) and China National Offshore Oil Corporation (CNOOC). CNPC mainly focuses on upstream activities, and Sinopec focuses on downstream, although they may both be involved in upstream and downstream projects. The third NOC, CNOOC, is an offshore exploration and production company. CNPC and Sinopec in terms of reserves and production are similar to the largest International Oil Companies (IOCs) and other NOCs. CNOOC is of a comparable size to a medium IOC or NOC (Speed & Roland, 2011).

Table 4.1 Comparative data for Chinese NOCs, IOCs and other NOCs, for the year 2008

	Oil and gas production (mmtoe)	*Reserves (mmtoe)*	*Refinery Output (mmtoe)*	*Revenue (million US$)*	*Profit (million US$)*
Chinese NOCs					
CNPC	227	5,025	125	185,839	19,679
PetroChina Ltd	161	4,665	74	156,372	18,489
Sinopec Group	49	n/a	173	213,495	3,854
Sinopec Ltd.	47	933	169	211,986	3,550
CNOOC	43	344	0	28,438	9,898
CNOOC Ltd	26	343	0	18,391	8,450
IOCs					
Exxon	195	9,819	270	477,359	45,220
Shell	162	1,487	169	458,361	26,476
BP	191	2,475	107	365,700	21,666
Chevron	126	1,077	92	264,958	23,931
Total	117	1,426	118	253,719	19,524
BG	31	1,790	0	18,474	7,941
Other NOCs					
Saudi Aramco	570	41,627	79	n/a	n/a
Gazprom	582	36,012	79	85,050	30,384
Petrobras	119	2,059	98	113,111	14,002
Petronas	89	3,685	22	63,980	27,387
ONGC	48	1,322	3	13,084	4,824

Note: mmtoe = million tonnes of oil equivalent.
Sources: company websites.

(Speed & Roland, 2011)

Figure 2: Comparative Data for Chinese NOCs

The above table shows that CNPC and Sinopec have comparable profit margins to the world's leading International Oil Company (IOC), ExxonMobil, but have much higher profit margins than other IOCs such as Shell and BP. Given that China has

limited petroleum reserves at home, it is commendable that the Chinese NOCs are comparable to leading IOCs and NOCs in the world.

The three NOCs were also geographically divided by the State in China, although now that the quest for international oil has taken precedence, the domestic boundaries have been blurred. Northern China is controlled by CNPC, Southern China is controlled by Sinopec, and CNOOC is responsible for offshore production activities (Jiang & Cinton, 2011).

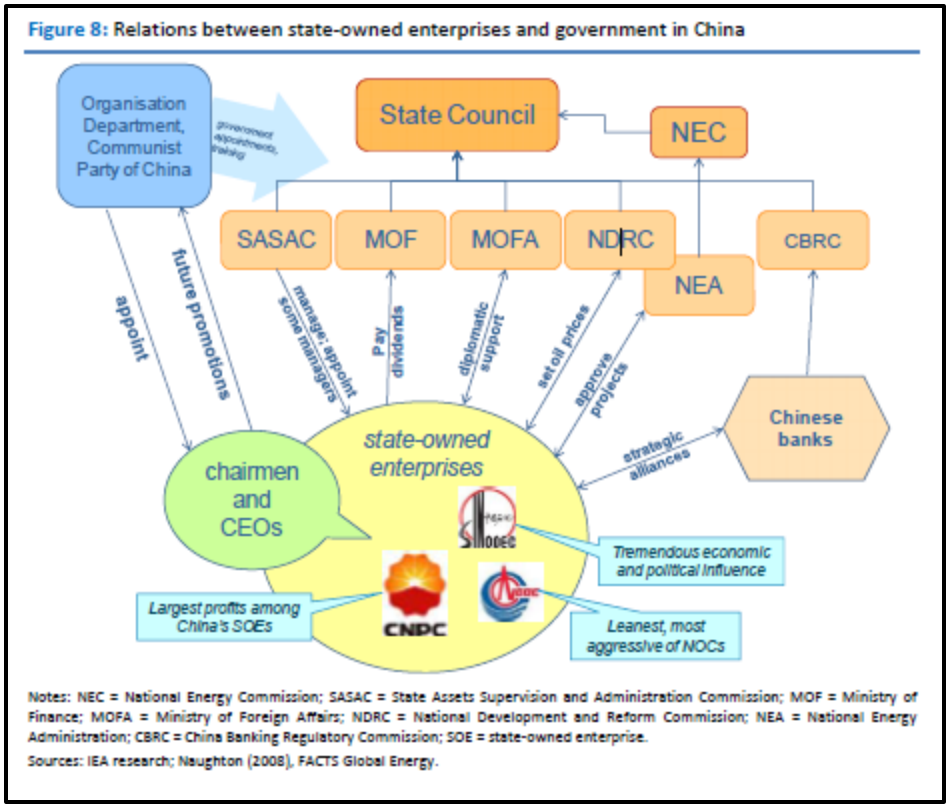
A distinguishing factor of Chinese NOCs as opposed to other NOCs is that Chinese NOCs may make decisions in line with State policies, but they are not run by the State even though they are owned by the State. The purpose of decentralization was to make profitable oil corporations, and the government encourages healthy competitions amongst the three entities (Jiang & Cinton, 2011).

II. STRUCTURE OF CHINESE GOVERNMENT BANKS:

Before the 1994 reforms, the four major Chinese banks were responsible for commercial and policy-based lending. These banks were Agricultural Bank of China (ABC), Bank of China (BOC), China Construction Bank (CBC) and the Industrial and Commercial Bank of China (ICBC). As a part of the 1994 reforms, the Chinese government formed three new banks for fulfilling policy objectives, and the four mentioned above were designated to lend on a purely commercial basis (Gallagher, Irwin, & Koleski, 2012). The three new policy lending banks were China Development Bank

(CDB), China Export-Import Bank (China Eximbank) and Agricultural Development Bank of China (Downs, 2011).

The Chinese government decided to separate policy and commercial banks, as it did not want the commercial banks to have an excuse for being not competitive in the market due to their efforts to achieve policy objectives. This did not mean that the three new policy banks did not have profitability as an objective. All state-owned firms in China have profitability as one of their key objectives. Erica Downs states that China Development bank along with having profitability as one of its major goals also focuses on developing a competitive international portfolio of investments and strives to be one of the best banks in the domestic Chinese market (Downs, 2011). The next section will discuss how the NOCs, the policy banks and the Chinese government work together to transact these loan-for-oil deals. A graphical representation of the organization of the Chinese government, NOCs and banks is as follows:



(Jiang & Cinton, 2011)

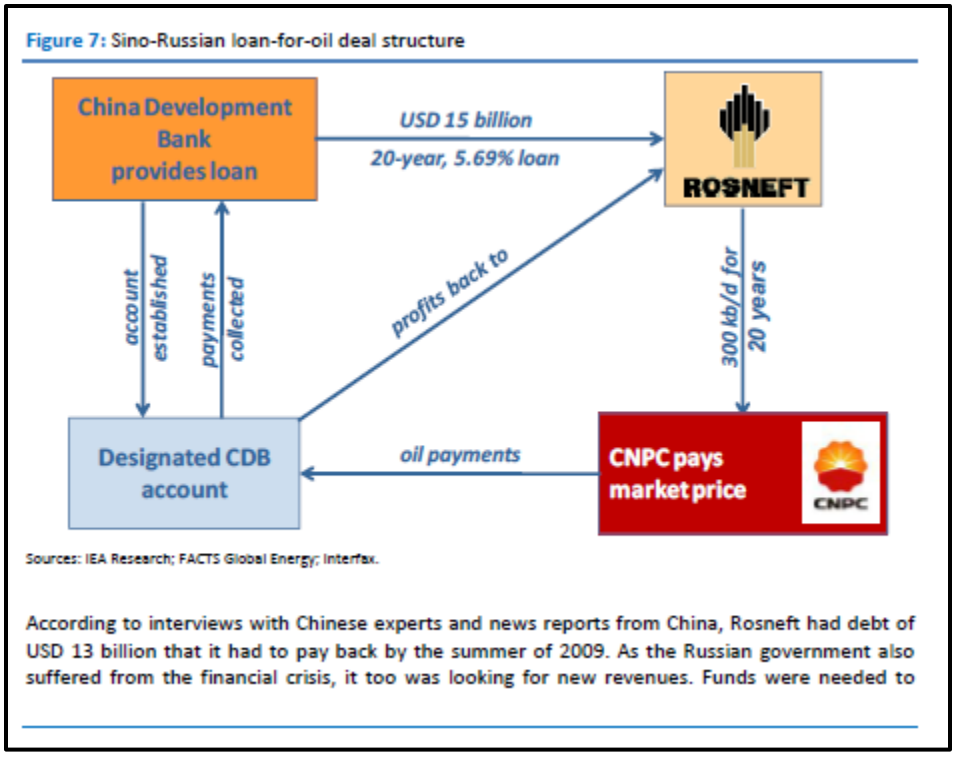
Figure 3: State-Owned Enterprises and Government of China

III. STRUCTURE OF LOAN-FOR-OIL DEALS:

There is a common misconception about the loan-for-oil deals that China extends loans to resource-rich countries and the loan is repaid by exporting a certain quantity of oil to China for a defined number of years in the future (Alves, 2013). In fact, the loan-for-oil deal is a combination of two separate agreements: it comprises a loan agreement and an oil sale agreement between two countries' state-owned banks and oil companies. The worth of the oil guaranteed is usually much more than the combined size of the loan

allotted plus interest payments due (Gallagher, Irwin, & Koleski, 2012). There are three main players involved in these deals: a Chinese NOC, a borrowing country NOC and a Chinese policy bank. In these deals, so far only Sinopec and CNPC have been involved from the Chinese NOCs and CDB from the policy banks. The borrowing country NOC changes depending on the loaned country. First, CDB loans the agreed amount to the recipient country NOC. Second, a CDB account for the borrowing country NOC is established, and the Chinese NOC is required to deposit payments for imported oil into the CDB account. The CDB then uses these payments to service the loans. The total monetary value of the oil imported by the Chinese NOC is greater than the loaned amount. CDB has the authority to deduct the loan service payments from the account of the borrowing country NOC. Once the loaned amount along with the interest is recovered by the CDB, the borrowing country NOC is free to withdraw the rest of the sum. (Alves, 2013).

These deals are also characterized by the fact that they have lower interest rates for loans than market-accepted rates for the borrowing countries. They are typically stretched over one or two decades, which gives China guaranteed oil supplies for a long time and the borrowing country a longer repayment time. A graphical representation of the structure is as follows:



(Jiang & Cinton, 2011)

Figure 4: Structure of a Loan-for-Oil Deal

These deals are a product of the frequent coordination between the State Council and state-owned entities to achieve their individual objectives (Downs, 2011). The State has tried to harmonize individual state entities interests along with its petroleum interests. A number of Chinese bureaucracies are engaged in finalizing these loan-for-oil deals, such as the Ministry of Foreign Affairs, Ministry of Commerce, National Development & Reform Commission, National Energy Commission, and the China Banking Regulatory Commission, along with the NOCs and Policy banks. These deals have been successful in

securing commitment for oil supplies for the future along with memorandums-of-understanding for energy co-operation with various oil-rich countries (Kong, 2010).

For the purpose of this thesis, I will examine three of these deals in detail to analyze my hypotheses stated earlier. These deals have been discussed earlier in the background section; however, here I will be stating the structure in greater detail, i.e. the government entities involved and the interest rates that were offered. I will then test the two hypotheses that I stated in the introduction for each of the three deals in the next two sections.

1. **Deal 1:**

In April 2010, Venezuela and China entered into a "Loan for Oil" agreement. China Development Bank agreed to lend Venezuelan NOC Petroleos de Venezuela (PDVSA) $20 billion at a rate of 285 bps over LIBOR (Gallagher, Irwin, & Koleski, 2012). In return PDVSA promised to supply CNPC with 200,000 barrels of oil per day for the next 10 years at prevailing market prices. This loan was extended for a joint venture between PDVSA and CNPC to develop the Junin 4 block on the Orinoco belt. Some of the money was also to be used for the development of infrastructure such as power plants and freeways (Jiang & Cinton, 2011).

2. **Deal 2:**

In February 2009, Russia and China entered into a "Loan for Oil" agreement. China Development Bank agreed to lend $25 billion for 20 years at a fixed rate of 569 bps. As a part of the oil sale agreement, Rosneft agreed to supply CNPC 301,000 barrels

of oil per day, and Transneft built a pipeline linking the East Siberia-Pacific pipeline system to China's Daqing Oil field (IEA).

3. Deal 3:

In February 2009, Brazil and China entered into a "Loan for Oil" agreement. CDB lent Brazil's NOC Petrobras $10 billion for ten years at a rate of 6% (Jiang & Cinton, 2011). The purpose of the loan was to finance a part of Brazil's pre-salt business plan 2009-2013 (Bloomberg, 2009) (Gallagher, Irwin, & Koleski, 2012). Brazil in turn agreed to supply China 150,000 barrels of oil per day for the first year, and 200,000 barrels of oil per day at prevailing market prices for the next nine years (Bloomberg, 2009).

Hypothesis 1: If China enters into loan-for-oil deals, then it is aiming to build friendships with oil-resource rich countries to advance its objective of oil-linked energy security.

Prediction: It is predicted that these loan-for-oil deals enhance China's oil-linked energy security, i.e. they contribute towards continuity of oil supply at a reasonable price. It is also predicted that China has provided some kind of incentives to oil exporting nations to enter into loan-for-oil deals that are beneficial for China.

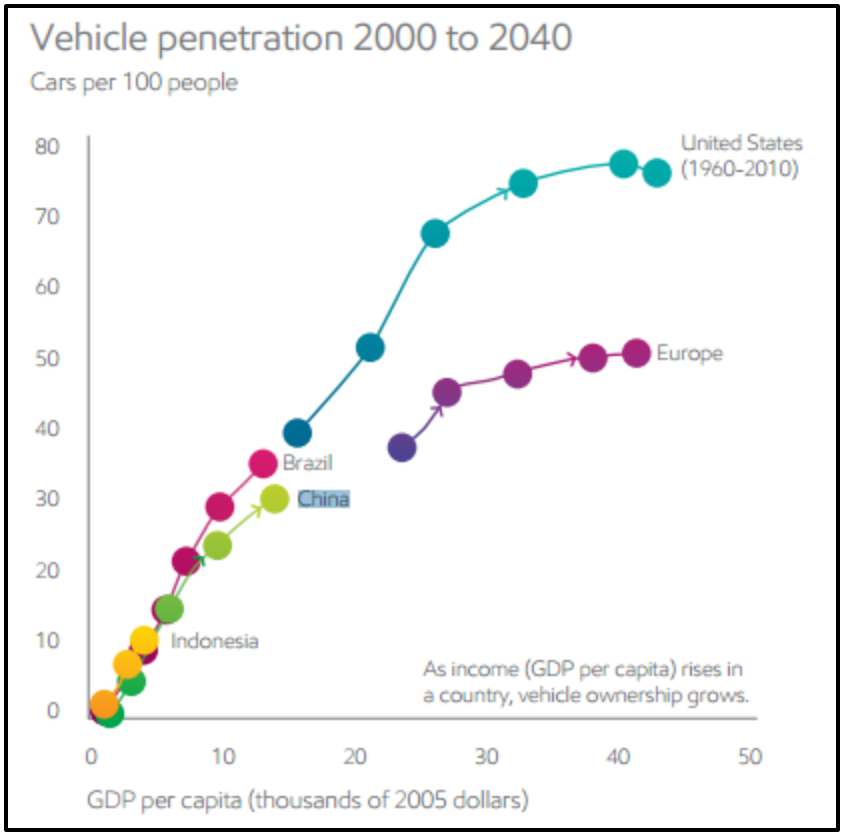
I. IMPORTANCE OF OIL IN THE CHINESE ECONOMY

This sub-section aims to highlight the importance of oil as a resource in China's economy. It discusses the reasons why China is concerned about oil-linked energy security in the future.

Currently China's oil consumption is 10.221 million barrels per day, accounting for 11.7% of total world oil consumption. It is the second largest consumer of oil, trailing behind the United States of America, which consumes 18.555 million barrels per day, almost 19.8% of total oil consumption (BP, 2013). A report by Wood Mackenzie forecasts that China will consume more oil than the U.S. by 2017 (Forbes, 2013). As of 2012, China imported 6.066 million barrels of oil daily (BP, 2013). Wood Mackenzie predicts that between 2005 and 2020, China's oil imports will increase from 2.5 million barrels per day to 9.2 million barrels per day, whereas U.S. imports will fall from 10.1 million barrels per day to 6.8 million barrels per day. This means a 360% increase for China over this period as opposed to a 32% decline for the USA (Wood Mackenzie, 2013). The statistics show that oil consumption for the second largest consumer of oil is

increasing and will surpass the current largest consumer of oil soon, due to an expected increase in oil demand for China.

China's current GDP is $8.229 trillion; it has grown 1,585% since 1992, the last year that China exported oil. China's GDP growth rate in 2012 was 7.8% (The World Bank , 2012). ExxonMobil, in its outlook to 2040, predicts that China's GDP will increase to about $22 trillion by 2040, an increase of almost 168% percent from current levels, averaging about 6% of annual growth in the future. The expected increase in GDP will lead to an increase in energy demand, mostly led by rapid urbanization. ExxonMobil, in its annual energy outlook states that as societies advance, people shift towards urban centers from rural areas. As people move from under developed rural areas to urban areas, their need of transportation through vehicles increases, leading to an increase in demand for oil. This has been the case in China. In 1990, 25 percent of the people lived in urban areas and the number had increased to 50 percent by 2010. By 2040, China's urbanization rate is projected to reach about 75 percent (ExxonMobil, 2013). Rapid urbanization leads to an increase in demand for air travel as well as ground transportation, leading to an increased appetite for oil in China (Burgos Cáceres & Ear, 2013). In 2010, for every 100 people in China, there were 5 light-duty vehicles. This number is expected to increase by 500 times in 2040 (ExxonMobil, 2013). The chart below shows that as GDP per capita increases for an economy, the people start to own more vehicles.



(ExxonMobil, 2013)

Figure 5: Vehicle Penetration 2000-2040

Whereas by 2040 all countries are expected to see an increase in demand for commercial transportation energy, China is expected to see the largest increase of about 4 million barrels of oil equivalent per day. It is expected to surpass Europe, U.S.A. and the Middle East in terms of energy demand for commercial transportation. Most of the demand for transportation fuel will continue to be from gasoline, diesel, jet fuel and fuel oil, with demand for diesel expected to increase by 75% mostly because of its use in trucks and other commercial modes of transportation (ExxonMobil, 2013).

China is well aware of the importance and criticality of oil and is concerned about the security of oil supply and prices. The Chinese president Hu Jintao in a G8 meeting held in Russia said, “The international community should take joint efforts to ensure global energy security that is crucial to the economic growth and people's livelihood of all countries, the world peace and stability, and common development” (Gov.Cn, 2006). Also, Zhang Guobao, former head of China’s National Energy Administration, emphasized the importance of oil for China, noting, “Oil security is the most important part of achieving energy security.” (Hashem, 2013).

Since the increased oil demand in the future will not be met by domestic sources, to sustain its economic growth China is forced to go abroad in search of energy sources. In this paragraph China’s refining capacity will be discussed to display the Chinese government’s efforts to meet its growing oil demand and to highlight the importance it pays to oil as a commodity. As has been discussed earlier, China became an oil importer in 1993, and the requirement grew each year since then due to rapid growth in the economy. China was quick to respond to this supply-demand gap of oil and took measures to increase its refining capacity for crude oil. Imported crude oil needs to be refined to be fit for domestic use, and the market for trading refined products is much smaller than crude oil trade. It is interesting to note from the graph below that China’s refinery capacity has grown in line with its oil consumption growth, making sure that it has ample capacity to refine imported crude oil to meet its growing domestic oil needs. It can be observed that the gap between refining capacity and oil consumption narrowed in 2000, continued to widen till 2007, before narrowing again in 2008. Crude oil production

in comparison to growth in oil consumption seems to have stagnated or has shown very little growth (Speed & Roland, 2011). This implies that the government was prepared for an increase in crude oil imports to meet its current domestic needs.

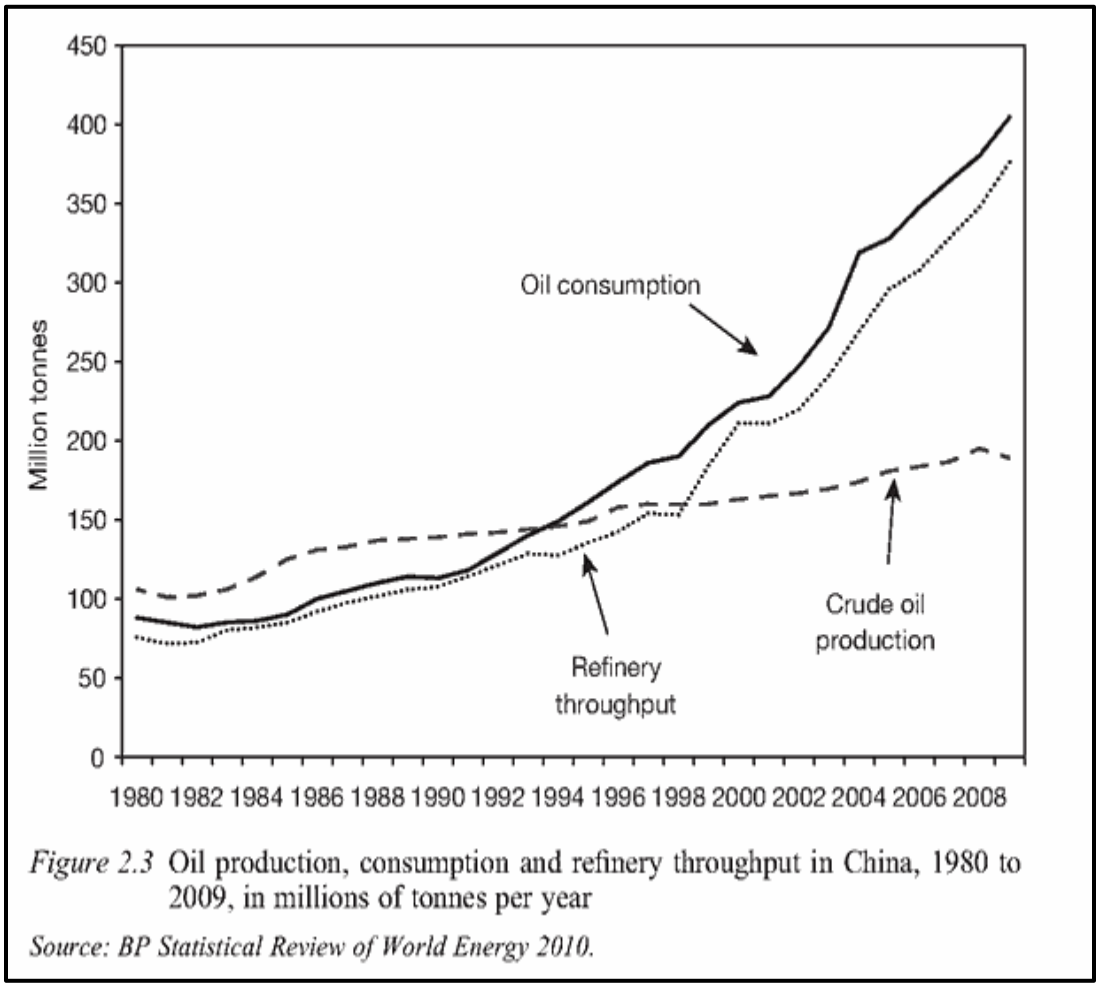


Figure 2.3 Oil production, consumption and refinery throughput in China, 1980 to 2009, in millions of tonnes per year

Source: BP Statistical Review of World Energy 2010.

(Speed & Roland, 2011)

Figure 6: Oil Consumption and Refinery Growth in China

Oil differs from other commodities that China needs for its economic growth, such as bauxite, iron-ore, copper etc. First, oil is the number one fuel of choice for

transportation. Whereas natural gas and bio-fuels are upcoming alternative fuels, they are still as of right now not a viable alternative to oil, as currently oil is used to make jet fuel and diesel, critical for airplanes and trucks, and most light-duty vehicles are expected to use petroleum in the future. Also currently countries find it difficult to switch their existing petroleum-related infrastructure such as gasoline pumps, etc., to natural gas or any other fuels. The physical properties of oil make it a preferable fuel for transportation due to its high quantity of energy per unit volume. Second, oil is easily transportable from one point to another, i.e. by ships and pipelines as compared to the next best alternative fuel, i.e. natural gas. There is a growing Liquid Natural Gas (LNG) market that may solve the problem of transportability of natural gas and may put it at a competitive edge to oil, but the LNG market is complex and requires substantial amounts of investments in exporting and importing countries. Also, natural gas does not seem to be a feasible substitute for jet fuel at the moment, which is currently a growing need for China. China differentiates from other oil importing countries because it changed from the status of an oil exporter to the world's second largest oil importer in a short span of time; this left the Chinese government vulnerable to oil supply shocks and concerned about their energy security (Speed & Roland, 2011). Third, China occupies a dominant position in the minerals market as compared to the oil market, leading it to be more concerned about oil than other commodities. If China were to reduce its demand for iron ore, bauxite or copper, that would be a cause of great concern for the producers, leading China to have greater power to dictate the minerals market than it does in the oil market.

The oil market has several countries as demand drivers due to which China does not enjoy a domineering role (Economy & Levi, 2014).

It can be deduced from the above information that China's high expected GDP growth will lead to rapid urbanization, leading to more demand for oil in the future. It is expected that it will have the largest increase in demand for commercial transportation vehicles. Oil is an easily transportable and a preferred fuel of choice for transportation, and a sought after commodity which is critical for China's GDP growth. Now that we have established the importance of oil in the Chinese economy, the following sub-sections will test if these loan-for-oil deals enhance China's oil-linked energy security.

II. CHINA'S QUEST FOR OIL MAY LEAD TO OIL PRICE STABILITY

This section discusses whether the loan-for-oil deals enhance China's oil-linked energy security. China has provided these loans for the development of oil reserves that are not conventional oil reserves, such as heavy oil fields in Venezuela and oil from pre-salt reservoirs in Brazil. China's quest for oil provides financing for exploring in areas where traditional drilling does not take place, and it leads to producing more oil for the world. A greater supply of oil may put downward pressure on future oil prices. China is an obvious beneficiary of relatively lower oil prices, since it is the second largest oil importer in the world. China's quest for oil is often perceived as a threat to oil related energy security of the world, but it may actually be beneficial in terms of increase in supply of oil (Burgos Cáceres & Ear, 2013).

Though China may eventually benefit in the future due to an increase in global oil supply, there are some points to consider. First, there is no guarantee that there will be stable oil prices due to an increase in oil supply by extracting from these unconventional sources; a lot will depend on future oil demand also. Second, China has no equity shares in these un-conventional oil reserves, so it does not have direct access to that oil. The loans-for-oil to Brazil and Venezuela do not guarantee an "uninterrupted supply of oil," as there is no clause or project that ensures the security of supply from Brazil to China or from Venezuela to China. And China will have to pay market prices for the oil in the future, which will not necessarily yield an "affordable price," as specified in the IEA's definition of energy security.

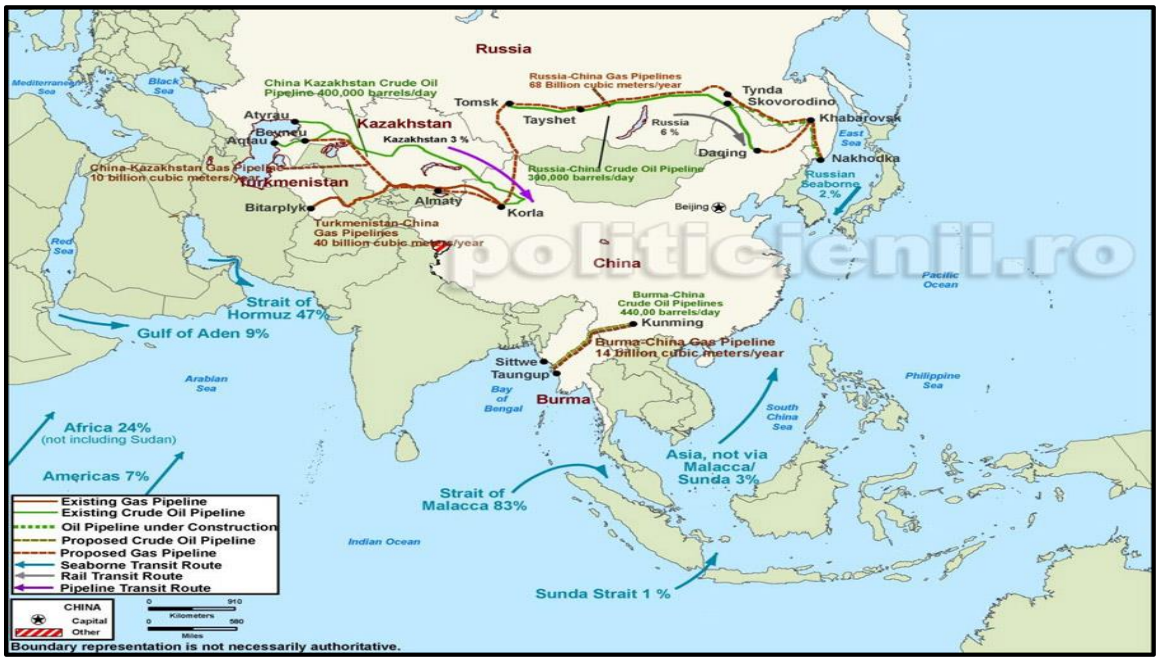
III. CHINA'S DEPENDENCE ON THE STRAIT OF MALACCA

This section discusses how loan-for-oil deals might address Chinese government's concern about China's dependence on the Strait of Malacca as a transit route for Chinese oil imports. The loan-for-oil deals might help provide alternate routes for supply, thereby contributing towards the Chinese goal of oil supply continuity.

The Strait of Malacca is a 1,100 kilometer shipping channel between the Indian and Pacific Oceans. It is one of the most crucial shipping lanes in the world. It is the shortest sea route to China for its oil imports from Africa and Middle Eastern countries. It is also used to transport oil to other major Asian economies such as Japan and South Korea. China currently depends on the Strait of Malacca for 80% of its oil imports (Burgos Cáceres & Ear, 2013).

In order to reduce its reliance on the Strait of Malacca, China is working on a strategy to identify and form alternative routes for the shipment of oil. At the Central Economic Work Conference in Beijing in November 2003, the China's then President Hu Jintao expressed his worries about the China's high dependence on the Strait of Malacca. He asserted that some "Great Powers" were attempting to control the Strait of Malacca and that China must formulate new oil transport strategies to protect the country's energy security (Kong, 2010). Some scholars have labeled these concerns and threats as exaggerated, as there are other low cost routes available for diversification from the Strait of Malacca, i.e. the Straits of Lombok and Makassar. This route is expected to add only 10% of shipping time in comparison to Malacca if calculated from the Middle East to East Asia (Gholz & Press, 2010). However, as noted earlier, Chinese officials have expressed their concern about diversification from the Strait. One of the loan-for-oil deals analyzed in this thesis provides a loan for pipeline construction to Russia, providing a way for China to import more oil through a route other than the Malacca Strait. China has also been involved in other pipeline projects with neighboring countries as a part of its diversification strategy.

The graph below identifies important oil transport routes (sea and pipelines) for China.



(People's Liberation Army of China, Annual Report 2011)

Figure 7: China's Oil Transport Routes

Although the deal with Russia provides a loan for an oil supply route alternate to Malacca for China, the "loan-for-oil", i.e. the oil sale commitment at market prices along with the loan extended, does nothing to help the cause of diversification from the Malacca Strait. China could have extended a direct loan to Russia for the development of the pipeline, or had a direct share in the equity of the project or could have invested in other infrastructure related projects as a part of its diversification strategy from Malacca. It also does nothing to assure an affordable price of oil as the oil in the sale agreement is

sold at market prices, and therefore does not contribute to satisfy the definition of energy security.

IV. CHINA'S LOANS COMPARED TO OTHER MULTILATERAL INSTITUTIONS & WESTERN BANKS / LENDING POST 2008 FINANCIAL CRISIS:

This sub-section discusses the incentives provided by China borrowers and the critical timing of these loans. It aims to establish that loan-for-oil deals are aimed at cultivating friendships with oil-resource rich countries.

The authors of the book "The Hungry Dragon" note that China has entered into agreements with resource-rich countries that have oppressive leaders, weak governance structures and little consideration for human rights and environmental issues (Burgos Cáceres & Ear, 2013). China imposes fewer conditions on its loans than its Western counterparts and multilateral institutions such as the IMF, World Bank, etc. IMF and World Bank loans aim to reshape the projects and organizations they lend to, as a result of which they impose strict policy conditions for the borrowing country or organization. Compared to these loans, China does not impose such conditions, as its goals for the loans are not similar to those of the IFIs. China is not aiming to develop recipient countries but is providing them loans for purposes like heavy oil or pipeline development that are of interest to China. The loans may contribute towards the borrowing country's development, but that is not China's primary goal. Shen Zhiliang, China's ambassador to Bolivia stated that it was China's principle not to impose what he termed "political conditions" on foreign aid. Also Venezuelan leader Hugo Chavez said that Chinese loans

differed from multilateral loans as they were "without strings attached" like financial scrutiny, in-depth monitoring, etc. (Gallagher, Irwin, & Koleski, 2012). The main conditionality attached to these loan-for-oil deals is the supply of oil at market prices, as discussed earlier. This is not comparable to policy requirements such as inflation control, targeted monetary policy requirements, etc. set by multilateral institutions, as oil resource rich countries are oil exporters anyway, and all they have to do is direct oil to China at existing market prices.

Another important point for discussion is the timing of these deals. The major loan-for-deals were transacted during or after the year 2009, when the world was affected by the 2008 financial crisis. Not only were these loans borrower-country-friendly because of subsidized rates, but they were being handed out at the time when these countries needed them the most. China had been working to establish a relationship with Russia for almost 15 years for the development of the Russia-China oil pipeline, but the deal came into effect only after the 2008 Financial Crisis, when cash-strapped Russia also needed the loan (Tunsjø, 2013). It is interesting to note the timing of these loans especially when we consider the hypothesis that China is aiming to buy friendships by extending these loans to meet its oil-related energy security goals; the timing being after the 2008 Financial Crisis for loans worth billions of dollars at subsidized rates would make the borrowing countries grateful to China and would foster deep relationships. It can be inferred that China in order to foster friendly relations with resource rich countries used the world financial crisis situation to its advantage.

By not imposing strict conditions on these loans combined with provision of subsidized loans of substantial amounts during a credit crunch, China can reasonably be seen to be aiming to develop friendships with oil-rich countries. The purpose of the loan-for-oil deals may not fully satisfy the definition of energy security, but by entering into them, China is using the loan-for-oil deals as a tool to develop relationships and at the same time is able to highlight the importance of oil in these relations. These deals do provide China a promised quantity of oil sales in the future, are directed towards alternative supply routes to existing oil supply routes, and increase world oil supply, which could be beneficial for China.

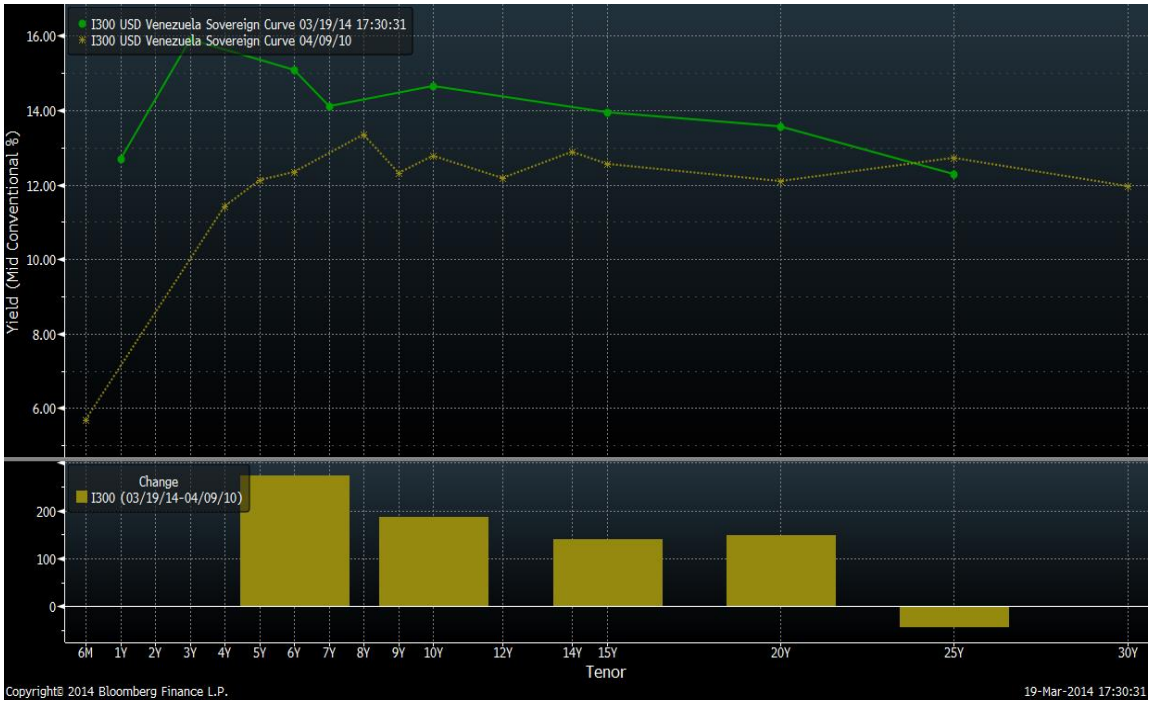
Hypothesis 2: If China enters into loan-for-oil deals, then it is looking to diversify its financial investments from US treasury bills and views these deals as credible alternative investments.

Prediction: These deals should have a positive net present value; even more, they should be expected to earn at least as much as Chinese investment in U.S. Treasuries. China's return on investment by entering into these deals should be competitive and market based.

This section tests the hypothesis that China views the loan-for-oil deals as a financial investment. In 2009, China had $1.9 trillion in foreign exchange reserves (Chinability, 2011). More recently, as of December 2013 China holds $3.82 trillion in foreign exchange reserves and struggles to find alternative investments. It has been estimated that as of 2013 $1.3 trillion has been invested in U.S. treasuries. Chinese officials acknowledge the safety and reliability of U.S. debt instruments but have expressed their intention to diversify the foreign exchange portfolio (Salidjanova, 2014). This has not really been possible, as it is hard for the Chinese to find a market vast enough that can accommodate China's reserves. The loans-for-oil have been extended in sizable quantities, i.e. billions of dollars at a time to multiple countries, and they may be a part of China's foreign exchange portfolio diversification strategy (Salidjanova, 2014). This paper will analyze each of the three deals mentioned earlier in order to test this hypothesis.

As discussed earlier, in April 2010, China Development Bank agreed to loan Venezuelan NOC Petroleos de Venezuela (PDVSA) $20 billion at a rate of 285 bps over LIBOR (London Interbank Offered Rate) (Gallagher). In return PDVSA was to supply 200,000

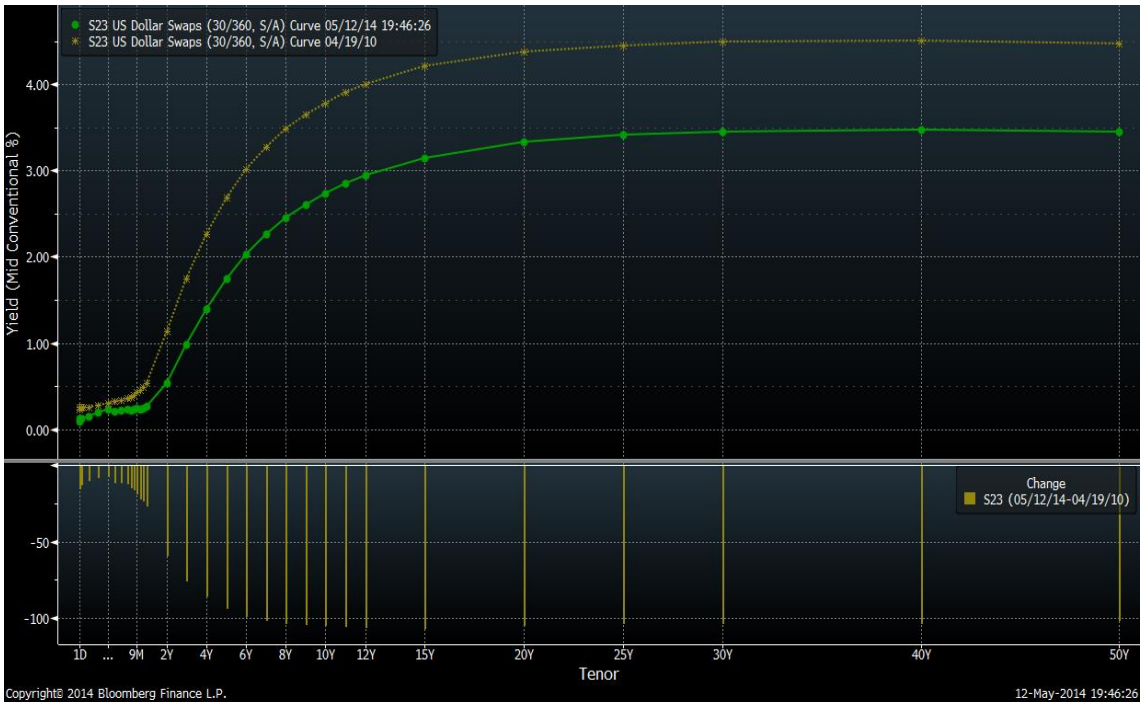
barrels of oil per day for the next 10 years at prevailing market prices to CNPC. According to Bloomberg data, the USD Venezuelan Sovereign Curve for a 10 year maturity tenor in April 2010 exhibited a yield of 12.8%. If the 10 year US Dollar Swap rate in April 2010 was 3.822%, then CDB lent at a rate of around 6.672% (adding 3.822% and 2.85%). [1]It can be inferred from this information that CDB gave a subsidy of at least 6.128% to PDVSA for this loan. The financial evaluation of this subsidy is a lower bound, because PDVSA will have a higher credit spread than the Venezuelan sovereign debt.



Source: Bloomberg

Figure 8: Venezuela Sovereign Curve

[1] LIBOR is a floating rate benchmark that indicates the prevailing interest rate of a certain time period. For this purpose, the prevailing 10 year USD Swap rate is used as a benchmark for the calculation of subsidies.



Source: Bloomberg

Figure 9: US Dollar Swaps Curve

In order to ballpark a figure for an absolute amount of subsidy given, we can consider the interest payments of the loan as an annuity, using the formula for Present Value of an Ordinary Annuity to calculate the cash flow per period "C1" that is to be received by China, when the interest rate "i" is at a subsidized rate of 6.672%. The formula used is as follows:

$$PV_{Ordinary\ Annuity} = C * \left[\frac{1-(1+i)^{-n}}{i}\right]$$

Where

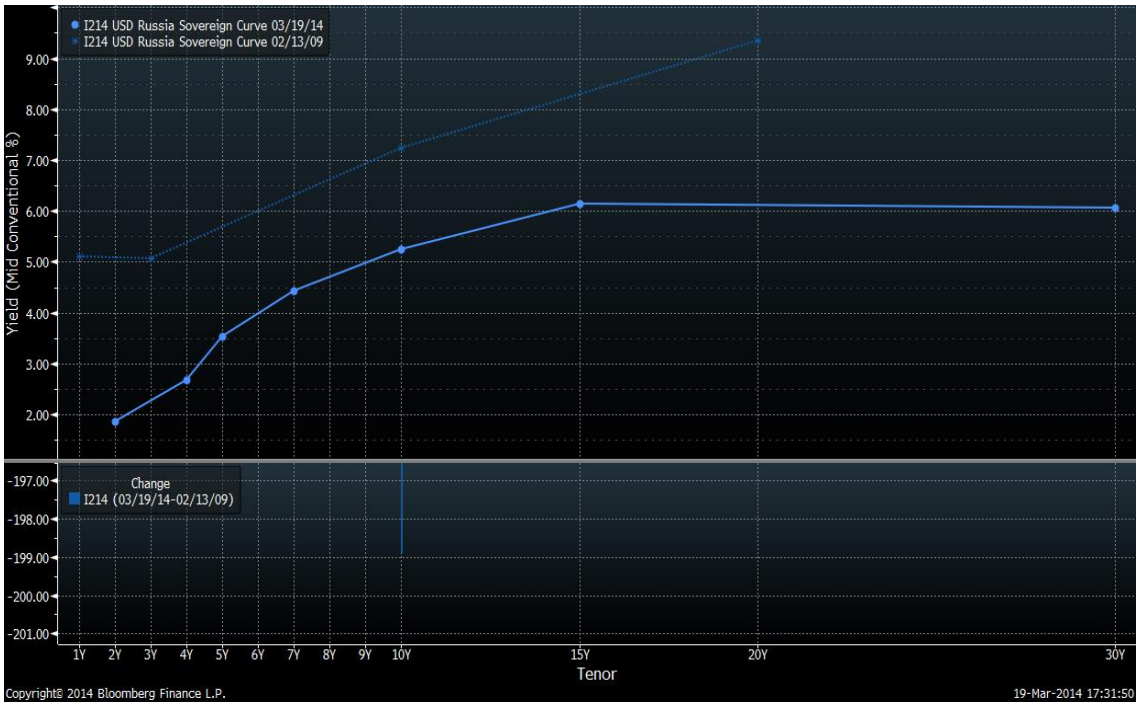
C = Cash flow per period

i = interest rate

n = number of payments

We then calculate the Present Value as a second step, in order to calculate the Value of an Ordinary Annuity when interest rate "i2" is at the prevailing market rate of 12.8%; we multiply the cash flow "C1" calculated earlier by the annuity factor when i2 = 12.8%. We get a present value approximate figure of $15.745 billion for the transaction. Since the value of the loan allotted today is $20 billion, we can approximate that CDB subsidized the loan by an amount of $4.254 billon (by subtracting $15.745 billion from $20 billion).

Moving to the second deal for further analysis, as described earlier, in February 2009, China Development Bank agreed to lend $25 billion for 20 years, ($15 billion to Rosneft and $10 billion to Transneft) at a rate of 569 bps. The USD Russia Sovereign Curve for a 20 year maturity tenor in February 2009 exhibited a yield of 9.4%. It can be inferred from this information that CDB gave a subsidy of 3.71% to Rosneft and Transneft for this loan. The financial evaluation of this subsidy is a lower bound, as Rosneft and Transneft will have a higher credit spread than the Russian sovereign debt.

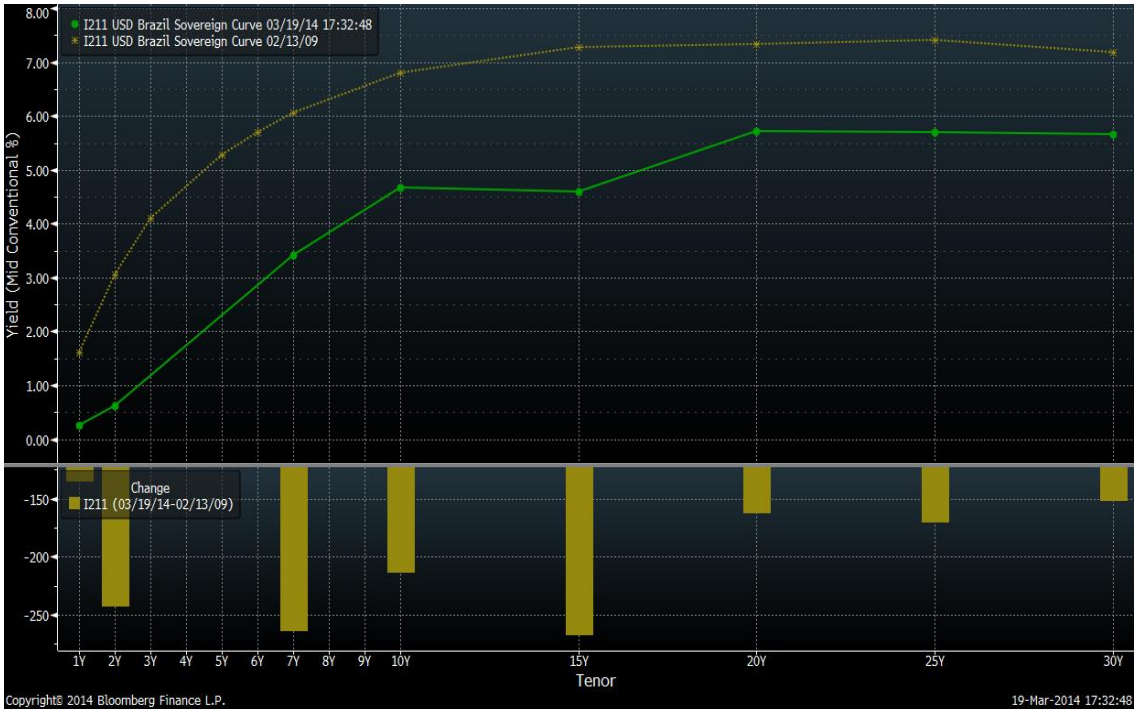


Source: Bloomberg

Figure 10: Russia Sovereign Curve

The same method as stated previously is applied to calculate a figure for subsidy to Russia. We use the formula for Present Value of an Ordinary Annuity to calculate the cash flow per period "C1" that is to be received by China when the interest rate "i" is at a subsidized rate of 5.69%. We then calculate the Present Value of an Ordinary Annuity when interest rate "i2" is at the prevailing market rate of 9.4% by multiplying the cash flow "C1" calculated earlier by the annuity factor. We get a present value approximate figure of $19.16 billion for the transaction. Since the value of the loan allotted today is $25 billion, we can approximate that CDB subsidized the loan by an amount of $ 5.84 billion (by subtracting $19.6 billion from $25 billion).

Moving to the third deal for analysis, in February 2009 CDB lent Brazil's NOC Petrobras $10 billion for ten years at a rate of 6% (Jiang & Cinton, 2011). The USD Brazil Sovereign Curve for a 10-year maturity tenor in February 2009 exhibited a yield of 6.9%. It can be inferred from this information that CDB gave a subsidy of 0.9% to Petrobras for this loan. The financial evaluation of this subsidy is a lower bound, because Petrobras will have a higher credit spread than the Brazilian sovereign debt.



Source: Bloomberg

Figure 11: Brazil Sovereign Curve

Using the same method, I calculate a subsidy figure for Brazil. Using the formula for Present Value of an Ordinary Annuity to calculate the cash flow per period "C1" that is to be received by China when the interest rate "i" is at a subsidized rate of 6.0%. We

then calculate the Present Value of an Ordinary Annuity when interest rate "i2" is at the prevailing market rate of 6.9% by multiplying the cash flow "C1" calculated earlier by the annuity factor. We get a present value approximate figure of $ 9.64 billion for the transaction. Since the value of the loan allotted today is $10 billion, we can approximate that CDB subsidized the loan by an amount of $ 0.36 billion (by subtracting $9.64 billion from $10 billion).

The prediction that China views these deals as a financial investment cannot be accepted, as China has been subsidizing these loan-for-oil deals. Considering the fact that these loans were of sizable amounts and were being extended in the aftermath of the 2008 financial crisis, China had the option of lending at least at market rates if not above. Because China did not exercise that option, it can be inferred that China had other incentives linked to these subsidies. The loan-for-oil deals may address the issue of diversification from US treasuries as investments, but exclusively, they are not viable financial investments as they do not provide market based competitive returns.

Also, these loans are backed by oil being supplied at market prices. According to standard financial practices, premiums are paid to buy call and put options, i.e. the option to buy below or sell above market prices. There is no cost to buying a commodity at market prices, other than the prevailing price at that time; no one should pay in advance for the privilege of buying at market prices. So neither leg of the loan-for-oil deals, i.e. neither the loans nor the oil sale agreements, is attractive from a financial standpoint. Moreover, an oil futures market exists right now. It is interesting to note that China did not fix the price of oil to be bought in the future, despite having the option to buy the oil

at fixed prices from the oil futures market. The total trade volumes of oil futures and options market in 2010 was about 268 million contracts, each contract size is of a 1000 barrels i.e. a total of 268 billion barrels of oil traded (Ackworth, 2010). China's currently imports about 6 million barrels of oil per day, i.e. roughly 2.190 billion barrels per annum, which is about only 0.8% of the total futures and options market (BP, 2013). Since futures contracts are traded on and mediated by an exchange, the exchange holds the responsibility for settlements of contracts and is responsible for any defaults or delay in settlements. There is no risk of counterparty default for China, if purchasing oil on the futures market. Alternatively, China could have used the futures curve as a benchmark for pricing for the oil sale agreement part of the loan for oil deal. Presumably, China could have demanded a subsidy in the price of oil purchased – for example, $2 per barrel below market prices – in exchange for its loans; that it did not do so suggests that China had non-financial motives for its investments.

Theory of Hedging Framework

This section aims to outline a few theories stated in the book *Security & Profit of China's Energy Policy* by Tunsjo that will be used for the purpose of analysis in the conclusions section. I have chosen the theories in this book as they discuss China's quest for oil in the international market and are in line with my hypotheses; by applying these theories to my conclusions I aim to further understand China's motivations in the execution of loan-for-oil deals, which is the purpose of this thesis. Tunsjo in his book *Security & Profit of China's Energy Policy* discusses a hedging framework that explains China's quest for oil in the international market, considering both security of supply and search for profits. He states that China and its NOCs have a hedging strategy. The hedging framework comprises "long" and "short" positions. In standard financial definitions, a short position is for a bearish market view, i.e. one expects the prices of the underlying asset to decrease, and long is for a bullish market, i.e. when one expects the prices of the underlying asset to increase. The author views China's aim to be a dominant member in the international community as a "long" strategy, and close ties with oil producing countries as a "short" strategy, because China is paying a price for those ties. The Chinese government has diplomatic relations and security of oil supply as goals, whereas the NOCs have a profit motive. The theory of hedging framework is a combination of the "long" and "short" strategies deployed by the NOCs and the State to achieve their respective goals, i.e. profit motive for NOCs and security of oil supply and

diplomatic relations for the State. China does not trust the "longs," so invests in the "shorts" to maintain a balanced portfolio.

The author Tunsjo states that the development of pipelines for oil transportation is a short trading strategy, as pipelines are less flexible and more expensive than sea borne trade for oil. The aim of pipelines that are developed for the transportation of oil has additional motives, such as to increase diplomatic ties across borders, which according to the author is a short hedging strategy, as one is trading profit for security. The author also differentiates between wartime risks and peace time risks. He views pipelines as a risk in peace time and sea borne trade as a risk in war time. Sea borne trade is a risk in war time as during war, several critical straits that are major oil trade choke points may be blocked by attacking States. Pipelines, however, are prone to peace time risks such as pricing conflicts, commercial competition and dodgy regional political relations. The decision to development pipelines is mainly a strategic decision, as pipelines are safer during wartime and also work towards cross-border diplomacy.

The author also differentiates between threats and risks. Threats can be eliminated by proper identification and action but risks cannot be eradicated but only reduced. He views China’s energy security a problem of risk management. The example of a threat would be a blockade of China’s seas, in the event of which China would be able to identify it and use its navy and arms strength to eliminate such a threat. However, China cannot eliminate the risk of a war in the Middle East, blockage of an oil exporting country, speculation in the financial markets or other external factors not directly related to China that may spike the price of oil or disrupt its oil supply. It is not possible to

eradicate risks, but they can be reduced by proper management, and China is pursuing a strategy for risk reduction, not for elimination of threat (Tunsjø, 2013).

The authors of the book *China, Oil and Global Politics* discuss two main categories of "threats" that face oil importing countries and two main ways to address those risks. The categories of threats are, first, an interruption to physical supply of oil and second the rise in the price of oil. To reduce the expected value of these risks, two kinds of measures may be taken: first, measures that intend to reduce the probability of a risk event and second, measures that reduce the "negative impact" of a risk event (Speed & Roland, 2011). The main difference between the two types of addressing risks is that one is aiming for a "negative impact" event to not happen, and the second is aiming to reduce risk in the case of a "negative impact" event takes place. As pointed out by Tunsjo, many authors use the words threats and risks interchangeably; this is also the case for the theory stated in the book *China, Oil and Global Politics*. This thesis will acknowledge the difference between threats and risks and will refer to disruption of oil supply and oil price shocks as risks rather than threats, as the distinction is applicable in today's world order, where countries are susceptible to external events that they may not have control over. In the next section, I will be applying these theories and definitions for analyzing loan-for-oil deals.

Summary & Conclusions

Studying the structure and motivations behind the loan-for-oil deals helps us understand China's behavior in today's world order. The first prediction that these loan-for-oil deals enhance China's oil-linked energy security, i.e. they contribute towards continuity of oil supply at a reasonable price, cannot be accepted in light of the arguments discussed earlier. In summary, while these loan-for-oil deals may support avenues of alternate transport routes for supply of oil in the case of the deal with Russia, they do not guarantee an affordable price for the oil exported as part of the deals and therefore the component of "for-oil" in the deal is irrelevant. There is no need for China to enter into a loan-for-oil deal, as China can directly loan or invest in infrastructure projects, such as the construction of the pipeline from Russia without having the clause for pre-sale agreement for oil. The pre-sale agreement just guarantees a certain quantity of oil to be sold, but does not guarantee the price it will be supplied at, along with there being no consequences in case the borrowing country defaults on its pledge to supply oil. Therefore, it can be concluded that loan-for-oil deals do not enhance China's goal of oil-linked energy security. In the case of Brazil and Venezuela, China does not have access to any oil equity in these deals, and loans-for-oil do not ensure security of oil transported from those regions. Investments in oil-related projects with Russia, Brazil and Venezuela could have been made without having these loans backed by oil supplies, or by negotiating a stake in oil equity for China. Also, the prediction that China has provided incentives to oil exporting nations to enter into loan-for-oil deals that are beneficial for

China is true. These loans were subsidized as proved in the section that discuses hypothesis two, had no strict conditions, and were extended in the aftermath of the 2008 financial crisis. Based on these facts, it can be inferred that China is aiming to develop friendships with oil-rich countries. This leads us to deduce that the first prediction for this hypothesis is false, whereas the second prediction is true, leadings us to not accept the first hypothesis.

The second prediction that China views these deals as a financial investment in order to diversify its investment of foreign exchange reserves cannot be accepted, as China has been subsidizing these loan-for-oil deals much below the existing market rates at that time. The loan-for-oil deals may address the issue of diversification from US treasuries as investments, but exclusively, they are not viable financial investments as they do not provide market based competitive returns. Also China did not fix oil prices even though there is an existing oil futures market for a point of reference, nor did China ask for some kind of a subsidy on prevailing oil prices. The two legs of the deal, i.e. the loan and the oil sale agreement, are not attractive from a financial investment standpoint, so we cannot accept hypothesis two.

This thesis addressed two main questions. First, why is the oil being supplied only at market prices? And second, why are the loans subsidized? China has transacted the deals with different countries at varying subsidized rates. According to the data, Venezuela was provided a much higher subsidy than Russia and Brazil, i.e. the loan was subsidized by almost 6.128% in percentage terms, whereas the loans to Russia and Brazil were subsidized at 3.71% and 0.9% respectively. The absolute amount of subsidy given

to Venezuela is calculated to be at almost $4.254 billion for a period of ten years, to Russia at almost $5.84 billion for a period of twenty years, and Brazil $0.36 billion for a period of ten years. Along with increasing refining capacity in line with increase in oil demand, China has invested in new refinery capacity that is capable of refining heavy, sour, and high acid crude oils. Heavy oil is cheaper than light sweet crude oil in the global market, the average differential in 2010 was about $14.23 per barrel (Baytex Energy Corp. , 2010), and the additional cost of removing sulfur from heavy crude in order to meet China's oil standard is only ten cents per barrel, leading it to be more profitable for China to import heavy crude oil than light crude oil. By incentivizing Venezuela through a loan-for-oil deal, China is strengthening its relationship with a trading partner that is a heavy oil exporter. Also, CNPC entered into a $6 billion deal with PDVSA in Venezuela to set up a refinery in the Guangdong province in China to refine heavy and sour crude oil. CNPC also entered into a $5 billion agreement with Rosneft to build a refinery in the Tianjun province of China (Tunsjø, 2013). Having joint investments with foreign NOCs has two main advantages for China. First, the likelihood of defaulting on an oil supply agreement that is a part of a loan-for-oil deal decreases when the counterparty NOC such as Rosneft or PDVSA has a stake in the refinery that will process that crude oil (Tunsjø, 2013). Second, by partnering with international NOCs, China gains access to technology that may be useful for China for the development of its own reserves, especially complicated oil drilling activities for e.g. off shore drilling, potential heavy oil reserves in China etc. (Economy & Levi, 2014). This

explains why loans to Venezuela are more subsidized than to the rest of the countries under analysis.

The conclusion is that the loan-for-oil deals do not enhance China's oil linked energy security, neither are they a viable diversification from investments in U.S. treasury bills, but by offering subsidized loans with relaxed conditions to oil exporting countries post the 2008 financial crisis, China is using these deals as an apparatus to develop friendships with oil exporting nations, thereby highlighting its interest in oil as a commodity. It can be speculated that the friendships formed as a result of these deals may contribute towards China's oil linked energy security goals in the future, however proving this conjecture is outside the scope of this thesis.

In light of the hedging framework discussed earlier, the loan-for-oil deal can be considered a hedging strategy that can be either long or short depending on what aspect of the deal is analyzed. It is a short strategy as it aims to foster strong diplomatic relations with oil rich states at the cost of the subsidy of the loans. The deals however contribute towards development of oil reserves that may not be developed if China did not extend these loans. This may lead to more oil production in the future, leading to relatively lower oil prices, and China is a direct beneficiary of this situation, as it is currently the world's second largest oil importer. The deals that are focused on only pipeline development, such as the deal with Russia, solely follow a short strategy, as they aim towards strong diplomatic relations, even though pipelines are a more expensive form of transportation than sea-borne trade, i.e. if oil is imported from counter-party other than Russia. China is not aiming to solve its problems of energy demand-supply gap, military security, and

over dependence on the Strait of Malacca by providing subsidies on these loans, but it is working towards a framework that will reduce the probability of "negative events" happening, and in the event that a negative event has taken place, it will reduce the impact of the negative event. For example, in case of a war or a blockade that threatens the Strait of Malacca; China will continue to import oil from Russia via the pipeline. In case of a blockade of the Strait of Hormuz, where 55% of China's oil imports are shipped, China will continue to have provision of oil supply from Venezuela, Russia, and Angola.

China is following the hedging strategy of "Be nice today, you are unaware of future developments" by extending these loans-for-oil (Tunsjø, 2013). In order to hedge for expected and unexpected disruptions, these deals pursue a "win-win" relationship strategy. China was smart to transact these subsidized and "strings free" loans post the 2008 financial crisis. These deals help China in forming a favorable framework for more agreeable long term co-operation (Weitz, 2013). Also China is aware of the fact that the likelihood of default is less likely as these countries would not want to lose China as a trading partner, and oil exporting nations are less likely to not follow through on pre-sale oil agreements at market prices. In order to meet its energy needs China is aware of the fact that it will continue to be dependent on imported oil in the future, and to meet its goal in the best possible way, it is using these loan-for-oil deals to establish relationships with oil exporting countries, even if these deals may not address its goal of oil linked energy security.

Appendix

2. China's loans for long-term oil and gas supply signed since January 2009

Country/Date	Lender	Borrower	Amount (USD)	Beneficiary/ Buyer	Notes
Angola 13 Mar 2009	CDB	Angola government	USD 1 billion for agriculture projects		Since 2002, China provided an estimated USD 5 billion in oil-related loans.
Bolivia Apr 2009		Bolivian government	USD 2 billion to build infrastructure		In return for energy contracts.
Brazil 18 Feb 2009	CDB	Petrobras	USD 10 billion - Interest rate may be 6%	Sinopec and its trading subsidiary Unipec	150 kb/d of oil in 2009; 200 to 250 kb/d from 2010 to 2019 at market price.
Brazil 15 Apr 2010	CDB	Petrobras		Sinopec	Petrobras and Sinopec to co-operate in expanding deep-water exploration, production, refining and transport.
Ecuador Jul 2009	CDB	PetroEcuador	USD 1 billion payment up front, interest possible 6.5%	CNPC/ PetroChina	96 kb/d for two years.
Ghana Jun 2010	CDB	GNPC		Sinopec	Sinopec and GNPC signed MOU on upstream, midstream and downstream related oil projects. The loans provided to GNPC are for the development of its offshore Jubilee Oilfield.
Kazakhstan 17 Apr 2009	CEIB	KMG	USD 10 billion	CNPC	USD 3.3 billion used to buy 49% of Manqulstaumunaigas (MMG) from Indonesia's Central Asia Petroleum.
Russia 17 Feb 2009	CDB	Rosneft	USD 15 billion for 20 years Average rate of 5.69%	CNPC	300 kb/d for 20 yrs (2011-2030, 15 Mt/y +/-4.1%). Market price at Nakhodka port to CNPC. Pricing could be quoted monthly. Will sell 9 Mt to CNPC and 6 Mt to Transneft
	CDB	Transneft	USD 10 billion	CNPC	For construction of pipeline linking East Siberia-Pacific pipeline system (ESPO) at Skovorodino to Chinese Daqing oilfield. Capacity 600 kb/d, length 1 030 km. Transneft to build part in Russia (70km) and CNPC to build part in China (960 km). China part finished June 2010.
Turkmenistan Jun 2009	CDB	Turkmengaz	USD 4 billion	CNPC	40 bcm/y of natural gas for 30 years.
Venezuela 21 Feb 2009	CDB	Bandes (PDVSA)	USD 4 billion into a joint development fund	CNPC/ PetroChina	200 kb/d of oil to CNPC, market price, term contact, USD 1-2/b discount is offered, invoiced monthly.
Venezuela 17 Apr 2010	CDB	Bandes (PDVSA) and government	USD 10 billion and RMB 70 billion	CNPC	Petroleos de Venezuela and CNPC to form joint venture to jointly develop Junin 4 block. It will produce 2.9 billion barrels of heavy oil over the next 25 years. Also tied with infrastructure projects including freeways and power plants.
Total			**Approx. USD 77 billion**		

Sources: IEA research; FACTS Global Energy (2010); Interfax; CNPC Research Institute of Economics & Technology (2010); Chinese media reports.

(Jiang & Cinton, 2011)

Figure 12: China's "Loan-for-Oil" Deals

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Vita

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This thesis was typed by the author.