

Developing country FDI and development: the case of the Chinese FDI in the Sudan

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This paper examines the development implications of Chinese investment in the Sudan to enable a better understanding of the impact of foreign direct investment (FDI) from developing countries. By examining China's early investment in the Sudan by the Chinese National Oil Corporation (CNPC) and the consequent cascade effect on the Sudan's significant economic growth during the decade between 1997 and 2007, this paper highlights how progress was achieved through interaction between Chinese FDI and host institutions. It demonstrates that developing country FDI can make positive contributions to development particularly in developing countries, due not only to its capacity appropriate for developing countries, but also to its strategies and mindset more adaptable to the development needs and institutional environment in the host country. While extant research often emphasizes how institutions make FDI's impact on host countries differ and how institutions in developing countries should be improved in order to attract FDI, this research indicates that proactive adaptation of strategy by transnational corporations (TNCs) to fit local needs and institutions may be more effective for improving institutions and consequently the development in host countries.

Key words: foreign direct investment (FDI), development, transnational corporation (TNC), China, China National Petroleum Corporation (CNPC), Africa, natural resources

1. Introduction

Africa, as home to 300 million of the globe's poorest people, presents the world's most formidable challenge for development. Traditional policies to promote development, such as aid and trade, are considered unsuccessful (**Birdsall** et al., 2003; Easterly, 2009), while foreign direct investment

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(FDI) from developed countries had been stagnant for decades up to 2005 (UNCTAD, 2007). However, the recent dramatic rise of FDI from developing countries has brought both hope and concern for Africa's development. FDI inflows to Africa rose from \$29 billion in 2005 to \$36 billion in 2006, and to \$53 billion in 2007 (UNCTAD, 2008).¹ Despite the current financial crisis, inflows to Africa increased by 27% in 2008, to another record high of \$88 billion (UNCTAD, 2009, p. 42). Inflows did show a decline in 2009 to \$59 billion, but it was believed that the decline was comparatively "moderate" and this was because that "new investors provided a buffer" (UNCTAD, 2010). Many of these new investors are from developing countries.

The driving force behind this recovery was primarily the boom in the global commodity markets, which led to large FDI inflows into the primary sector (UNCTAD, 2006, 2007). China has substantially increased its investment into Africa at a drastic pace. Its annual investment flows into Africa were only \$20 million in 1997 and \$75 million in 2003, but rose to \$317 million in 2004, \$392 million in 2005, \$520 million in 2006, and then more dramatically rose to \$1,574 million in 2007, \$5,491 million in 2008 and \$9,107 million in 2009 according to the Chinese Ministry of Commerce (MOC, 2007, 2009, 2010a).² A World Bank source, on the other hand, estimates that the figure was less than \$1 billion per year before 2004 and over \$7 billion per year after 2006 (Foster et al., 2008). If this estimate is accurate, China may account for well above 10% of total FDI Africa received in the period between 2000 and 2008.

China's investment relationship with Africa is often described as "dominated by extractive activities" (Jenkins and Edwards, 2006, p. 16). However, this claim does not reflect the whole picture of China-Africa relationship. Trade between China and Africa doubled to \$18.5 billion from 2002 to 2003,, then jumped to \$73 billion in 2007, and \$106.84 billion in 2008, all record highs (MOC, 2010b). In 2009 with the background of global financial crisis, trade between China and Africa was still as high as \$91.07 billion. More importantly, China became the largest trading partner of Africa for the first time, ahead the United States, France and the United Kingdom (MOC, 2010a). Detailed data show that in 2008, Africa's exports to China reached \$50.84 billion, of

¹ The \$ sign refers to the US dollar in this paper.

² This annual figure obviously excluded the Chinese investment in oil, because CNPC alone invested over \$5 billion in Sudan by 2006 (CNPC, 2006).

which 71% were crude oil; Africa's imports from China hit \$56 billion, of which most were textile and clothes, machinery, transport equipment base metals and footwear.³ These data indicate that the surge of trade between China and Africa was driven by not only China's increased imports of African oil but also Africa's rising demand for Chinese goods.

China is also deeply involved in Africa's infrastructure construction. The Infrastructure Consortium for Africa (ICA) estimated that \$42.1 billion was committed by bilateral, multilateral and private sector sources for African infrastructure in 2007. Chinese commitments equalled \$4.5 billion while G-8 members of the ICA collectively committed \$3.5 billion (DFID, 2008).

At the China-Africa Cooperation Forum in 2006, President Hu Jintao announced China's commitments to Africa, including the doubling of aid by 2009; providing concessionary credits of \$3 billion; establishing a \$2 billion fund to support Chinese investment in Africa; cancelling \$1.3 billion debt due in 2005 for low-income countries; and expanding market access to African products (Hu, 2006). Since 2007, China has become a donor to the World Bank's International Development Association with a contribution of \$30 million in 2007. China has increased its contribution to the African Development Bank to \$120 million – its largest ever contribution.

This paper attempts to analyse the development impact of Chinese FDI in the Sudan from a perspective of developing country FDI located in developing countries. The focus will be on two considerations concerning China's FDI in Africa. One is that China's FDI in Africa relates to an important issue deserving much more research, namely developing country FDI located in developing countries. FDI from developing countries has risen rapidly over the past two decades⁴, and is considered to have particularly important implications for

³ "China Africa trade up 45% in 2008 to \$107 billion", *China Daily*, 11 February 2009. Also Brown and Zhang (2009).

⁴ FDI outflows from, and inflows to, developing countries set new records in 2007 of \$253 billion and \$500 billion respectively (UNCTAD, 2008). More importantly, global FDI flows from and to developed countries have been severely affected worldwide by the current financial crisis. However, FDI outflows from and inflows to, developing countries kept growing in 2008 although they have been slowing down since 2009 (UNCTAD, 2009).

host developing countries (UNCTAD, 2006), but there is not sufficient empirical research to demonstrate such implications.

Another consideration is that China's FDI in Africa may have particular implications for development. FDI is generally perceived to have more direct impacts on development than trade and aid, because FDI brings not only direct but also indirect impacts on host countries. Moreover, FDI in resource-rich countries is particularly controversial for its implication for development. Rich natural resources could bring development, as evidenced by both developed countries, such as Australia and Canada, and developing countries, such as Botswana, Brazil and Chile. At the same time, resource booms may also become a curse (e.g. Karl, 2007; Sachs and Warner, 2001; Pearce, 2005). In the case of Chinese resource-seeking FDI in Africa, a controversy has arisen as to whether China is engaging in a new colonialism in Africa, through which resources will be extracted but poverty left unchanged, or even worsened (Broadman, 2007).

The remainder of this paper is organized as follows. Section 2 provides an overview of the current research on the impact of FDI – particularly FDI from developing countries – on development. Section 3 sets out the research questions and methods. Section four demonstrates how Chinese investment and host institutions interact, and how they together impact on the Sudan's economy and society. Section five discusses development implications of Chinese FDI in the Sudan. Since econometric testing has not been possible at this stage, this paper concludes with some propositions for future empirical research.

2. Developing country FDI in developing countries: implications for development

How to promote development has been a long-running research concern for scholars across disciplines including international business research. The key development issue concerning international business scholars might be how FDI benefits the social and economic development of host countries.

The eclectic paradigm (Dunning, 1980) postulates that a firm internationalizes only when three inter-related advantages in ownership (O), location (L) and internalization (I) are present. TNCs are often

considered as the transferors of a bundle of resources and competences, including financial capital, technology, managerial and organizational capabilities and marketing skills, i.e. traditional asset-based ownership advantages (Dunning and Lundan, 2008). A firm internationalizes to exploit such ownership advantages if L and I advantages also exist. From this perspective, transnational corporations (TNCs) expand their operations overseas for their own interests but could make various direct and indirect contributions to the host countries, given their superior ownership advantages or capabilities over local firms. Direct impacts include those on the structure of trade and the balance of payments, on technology transfer, on local market structure, on the level of employment and human resource development, and on average labour productivity and wages. In addition, there are indirect impacts which affect local firms in the host economy. These effects may be transmitted through linkages with TNCs, or increased competition and knowledge spillovers to the local economy (Dunning and Lundan, 2008, p. 551).

TNCs' potential positive contributions may include the following. First, when investing in host countries, TNCs generate income and tax revenues for the host country. Second, TNCs may also establish backward and forward linkages (Hirschman, 1958), through which transfer of technology to local firms may take place. Third, TNCs may interact with the local economy through hiring workers and providing training, generating income and contributing to skills development. Fourth, the affiliates might have spillover effects, e.g. through the impact of competition that might spur local firms to improve their performance (UNCTAD, 2007).

However, TNCs' investment – even with their superior capacity – does not always result in generating positive impacts stated above. In fact, TNCs have been criticized for failing to enhance local firms' capability; using technology that is not always appropriate for local circumstances; creating merely low-wage jobs; and (ab)using their powerful political and economic position in host countries (Kolk et al., 2006).

Interestingly, while developing country TNCs are often thought to possess less ownership advantages than developed country TNCs (Mathews, 2006), they are believed to have particular implications

for host developing countries (e.g. Cuervo-Cazurra and Genc, 2008; UNCTAD, 2006; Yeung, 1994). First, their investment is located more in developing countries than in developed countries; over the years, South-South FDI has been increasing significantly in value. Second, it accounts for a larger share of inward FDI in developing countries, especially least developed countries. Third, the motivations, locational advantages sought, and ownership specific advantages of developing-country TNCs differ in several respects from those of TNCs from developed countries (UNCTAD, 2006) and therefore may also generate different development impacts. Following this trend to identify the difference between TNCs from developed and developing countries, Cuervo-Cazurra and Genc (2008) provide an empirical analysis to argue that developing country TNCs tend to be less competitive than their developed country counterparts, partly because they suffer from the disadvantage of operating in home countries with underdeveloped institutions. However, this disadvantage can turn out to be an advantage when they operate in countries with “difficult” governance conditions, because developing country TNCs are used to operating in such institutional conditions.

Based on their latest empirical research, Luo and Rui (2009) provide a new conceptual framework of “ambidexterity” to argue why and how TNCs from developing countries or emerging markets have stronger motives and abilities than their counterparts from developed countries to build and leverage ambidexterity to offset their late-mover disadvantages. They behave co-evolutionarily to deal with the more challenging external environment they face at home and abroad, leverage their co-competence (transactional and relational) to compete against their global rivals, develop co-opetitive (simultaneous cooperation and competition) ties with their business stakeholders, and maintain co-orientations (leveraging competitive advantages to bolster short-term survival and compensating competitive disadvantages for long-term growth). While the major external environment determining developing country TNCs’ ambidexterity is the context of much intense competition and close network in global business, the internal environment is believed to be the more adaptive goals, strategies and mindset of developing country TNCs towards host countries. The latter are considered important factors determining the impact of FDI on development (Yamin and Sinkovics, 2009). In line with the findings of Luo and Rui (2009), Prahalad (2010) provides examples of the ways

in which TNCs can adapt their processes and technologies to local conditions, thereby unleashing potential entrepreneurial incentives in local managers and bringing positive effects on development in countries like China and India. The crucial factor to make this happen, according to Prahalad (2010), is that TNCs need to have the mindset of “serving the poor”.

The implication from international business literature is clear. FDI, including resource-seeking FDI and investment originating from developing countries, has potential to promote development, but this depends not only on TNCs’ capacity but also on their goals, strategies and mindset and whether they fit with the host country needs and appropriate for the host country’s institutional arrangement. The question is how to achieve such a fit. Section 4 addresses this question by exploring the case of Chinese investment in the Sudan.

3. Research questions and methodology

The Sudan, territorially the largest country in Africa, has been selected as a case study for several reasons. First, the Sudan is the largest recipient of cumulative FDI from China in Africa by taking the oil investment into account. Second, Chinese FDI in the Sudan has been initiated and still dominated by oil investment. Third, the Sudan is a typical least developed country in Africa, combining advantages and disadvantages shared by sub-Saharan Africa as a whole. Research findings from the Sudan could provide many lessons for the rest of Africa. The following questions formed the core of the research project on Chinese FDI in the Sudan:

1. What are the basic patterns and features of Chinese FDI in the Sudan?
2. What are the strategies, capabilities, and contributions of the Chinese TNCs in the Sudan?
3. What are the important factors, apart from natural resources, that attract Chinese FDI to the Sudan?
4. Has the government created a sovereign wealth fund, as a step towards avoiding a “resource curse”?
5. What are the development implications for the Sudan from Chinese FDI?

As neither Chinese nor Sudanese authorities were able to provide the full range of archival data and information required for this research, we found fieldwork and interviews more suitable. Over a hundred interviews were conducted during four overseas field trips from 2005 to 2009, including three to Beijing focusing on the strategies and perceptions of Chinese firms on their investment in Africa, and one in the Sudan, focusing on local institutional environment and development implications from FDI. Follow-up interviews were carried out in 2009 and again in May 2010 through emails and phone calls. Interviewees in both countries included government officials, industrial experts, executives and site managers of the Chinese TNCs under study and their affiliates in the Sudan. The views of NGOs, local firms linked to Chinese firms, and local residents in the Sudan were also sought.

Given the sensitivity of the research topic, all interviewees were promised anonymity unless they were willing to be named. Key interviewees include the chief executive of Chinese National Petroleum Corporation (CNPC) Nile Ltd in the Sudan, who was also the General Manager of GNPOC – the largest oil consortium in the Sudan; the chief executive of Khartoum Refinery; a dozen middle level managers among CNPC’s affiliates in the Sudan; Mr Ali Yousif Ahmed, senior official of the Sudanese Ministry of Foreign Affairs and the former Sudanese Ambassador to China from 1993 to 1998; Mr. Hao Hongshe, Commercial Consul of the Chinese Embassy in Khartoum, and former official at the Ministry of Foreign Affairs in China who dealt with Sudanese relations in 1990s; head of the Africa Bureau at China’s Export and Import Bank; five officials at the Ministry of Finance, Ministry of Investment, and Ministry of Energy and Minerals in the Sudan; a few NGO staff members at the Sudan Working Group, and two academics who research the Sudan’s history and Darfur in particular. This paper was based on the information and views collected from all of these sources as well as other anonymous interviewees.

We also collected archival data from government departments of Sudan, including the Ministry of Investment, the Ministry of Finance, the Ministry of Energy and Mineral, and the Bank of Sudan, which are especially valuable because most of the data are in Arabic and not publicly available. Corporate annual reports, speeches by CEOs, published books and journal papers were also carefully studied. This paper is based on all these data as background but takes the CNPC as the case study.

4. Chinese FDI and cascade effect in the Sudan: major findings

The analysis in this section is based on the examination of the cascade effect on the Sudan's economy during the decade 1997–2007. In this paper, a cascade effect refers to the phenomenon that the initial Chinese investment in the Sudan's oil industry brought the direct effect of large revenues and the indirect effect of industrial linkages. The subsequent re-investment of the oil revenue by the Government of the Sudan and diversifying foreign investment in non-oil sectors led to other industries taking off, and the emergence of domestic investment and local entrepreneurs.

4.1 Chinese engagement in the Sudan

Poverty has been a consistent challenge for the Sudan. Its per capita GDP was \$38 in 1997, when CNPC started its oil investment in the country. Physical infrastructure is generally inadequate. Institutions are among the most diverse due to the geographical, ethnical and political division among its population. At the same time, the country is among the wealthiest in terms of natural resources, not only oil, but also minerals, water and agricultural land. It has substantial potential for rapid infrastructure, industrial and service development. This provides enormous business opportunities for local firms and TNCs. FDI in the Sudan's oil industry can be traced back several decades; oil majors like Chevron explored for hydrocarbons but eventually gave up due to the civil war and the failure to meet the demand from the host Government to speed up oil extraction.

China's engagement in the Sudan started as early as the 1970s, mainly providing aid and loans for non-commercial purposes. China provided a total of \$89.3 million in aid and loans to the Sudan in the 1970s and 1980s (Ministry of Finance, Sudan, 2008), when the Chinese economy was still relatively poor. The bilateral relation was cooler during the 1980s when China's top leadership shifted its policy to focusing on domestic development. In the early 1990s, it was the Government of the Sudan that initiated a renewal of the relationship with China, which led to a close commercial tie between the two countries. While FDI by Chinese firms (excluding oil investment) between 2000 and March 2008 was \$249 million (table 1), bilateral trade between the Sudan and

China rose from \$103 million in 1990 to \$9.7 billion in 2007 (Central Bank of Sudan, 2008, 2010). The accumulated aid and loans amounted to \$23,47 billion by 2006 (Sudanese Ministry of Finance, 2008). In 2010, China was the Sudan's largest trading partner while the Sudan was China's third largest trading partner in Africa, after Angola and South Africa. The first delegation invited by the Government of the Sudan to explore investment opportunities visited the Sudan in 1995. This visit included a tour of the Zhong Yuan Oilfield, later developed by an affiliate of CNPC.

Table 1. Chinese direct investment in the Sudan (Non-oil Part)

Year	Projects (employees)	Amount (US\$)	Industries
2000	5	38,440,451	Petrochemical service station, <i>Roads and Bridges (2)</i> , Computer Assembly, Bricks
2001	1	200,000	Leather products
2002	2	1,531,800	Furniture, plastic products
2003	3	12,071,850	Leather products, furniture, lighting bulb
2004	8 (414)	10,889,933	Plastic products (2), leather products, garment, food (2), oxygen supply, building material manufacture (2)
2005	12 (828)	46,376,952	Steel Manufacture, building material manufacture (2), plastic products (2), poultry and vegetables, earth moving, restaurant, roads and bridges (3), construction equipment
2006	17 (1141)	97,178,745	Transportation (3), advertisement, soil analysis, construction (2), <i>irrigation</i> , plastic products (3), construction equipment, <i>medical equipment</i> , <i>mining</i> , computer equipment, furniture, car component manufacturing and engineering
2007	22 (1615)	33,574,420	Car service (4), <i>constructions(2)</i> , <i>transportation</i> , <i>hotel</i> , media and advertisement, farms (2), poultry products, engineering workshop (2), steel, plastic products (3), mining (2), cement, garment
Mar-08	4 (386)	8,530,039	<i>irrigation</i> , agricultural products, miscellaneous (flooring and blankets), Plastic Products
2000-Mar2008	74	248,794,190	

Source: Ministry of Investment, Sudan (2008). Interpreted from Arabian language and then categorized by the author with assistance of her colleague.

Notes: (1) Data for China's investment in oil and petrochemical are not shown in this table. They are highly confidential and managed by Ministry of Energy and Mining, the Sudan. (2) Employee numbers were not available until 2004.

4.2 CNPC invests in the Sudan: capability, strategy and mindset

CNPC is China's largest producer and supplier of crude oil and natural gas, accounting for, respectively, 57% and 80% of China's total output in 2010. It is also a major producer and supplier of refined oil products and petrochemicals, second only to Sinopec. CNPC started its foreign expansion in 1993 but made no significant progress until 1997, when it acquired large stakes in Kazakhstan, Peru and the Sudan. By 2010, CNPC had about 80 overseas projects in 29 countries. It is now ranked sixth among the world's largest petroleum companies.

CNPC's capability is closely related to its dominant position in China's oil and gas industry, inherited from two major restructurings within China's oil and petrochemical industries. Before the 1980s, China's entire oil and gas exploration and production was controlled by the Ministry of Petroleum Industry. In 1988, the State Council dissolved this ministry and established CNPC to take control of its assets. The assets CNPC owned then were mainly upstream, as Sinopec was to control the downstream assets. This arrangement continued until 1998, when both companies were allocated assets covering upstream and downstream.

With over 50 years' operation, CNPC possesses unique, advanced petroleum technologies⁵, which supported the development of the Chinese petroleum industry as well as its overseas projects. In the Sudan, for example, by using technologies developed in China for passive rift basins and under-explored basins, CNPC made a discovery of five billion barrels of oil in Block 3/7 of the Melut Basin, a basin abandoned by western companies (chief executive of CNPC Nile Ltd interviewed on 21 April 2008, Khartoum).

Another important capability which assisted CNPC to win contracts was its ability to provide products and services at a lower

⁵ For instance, the non-marine petroleum geological technology put an end to the "China is poor in oil" argument and led to discoveries of large oil fields within China. The application of large heterogeneous sandstone reservoir development technology, separate zone production, water-cut control, and tertiary recovery technologies stabilized the production of the Daqing oilfield at around 50 million tons per year for 27 consecutive years, a record for the world petroleum industry. CNPC also owns technologies for the commercial development of small fault-block reservoirs (Zhou, 2006).

price or in difficult circumstances, even in underdeveloped and military-conflict countries like the Sudan. The lower price was based on cost advantages, with costs a third less than the Western bidders in some cases. This was particularly attractive for developing host countries with “too little money for too many unfulfilled projects” (anonymous Sudanese interviewee, 24 April 2008).

While TNCs are often accused of lacking the mindset to serve the poor (Pralhad, 2010), CNPC has many reasons to locate in the poor and serve the poor, as evidenced by examples such as establishing the refinery and petrochemical industries so as to allow the host country to climb up to the oil industry value chain.

This was influenced by its strategic intent of internationalization (Rui and Yip, 2008). As the investment in the Sudan was initiated by the two Governments, CNPC was therefore expected to be locally responsive in order to maintain the close relation between the two countries. At the same time, when resource nationalism makes global competition for oil reserves more intense, CNPC has to grasp any opportunity to increase its oil reserves and equip itself with international standards of technology, health and safety and corporate social responsibility in order to win international contracts.

On 29 November 1996, the four partners from Canada, China, Malaysia and the Sudan signed with the Government of the Sudan on a draft production sharing agreement for the exploration and development of Block 1/2/4 oilfield. In 1997, the Greater Nile Petroleum Operating Company (GNPOC) was established as a consortium, formed by CNPC, Petronas, Talisman Energy which sold its share to the Indian State-owned company - Oil and Natural Gas Corporation Limited (ONGC) - in 2003, and Sudapet (representative of the host Government). Based on the shares they held, which was 40%, 30%, 25% and 5% respectively, CNPC became the operator of GNPOC. By 2008, CNPC had invested in seven projects in the Sudan, including four oil exploration and development projects, one pipeline, one refinery, and one petrochemical project, worth an estimated \$5 billion (official at the Ministry of Energy and Mining, interviewed on 5 May 2008, Khartoum).

4.3 CNPC's investment in the Sudan: direct and indirect impacts

Direct impacts

The direct impacts that CNPC's investment has made on the Sudan are best represented by the huge revenue the country has received. The first barrel of oil was produced and exported from the Sudan in 1999. The Sudan's revenue rose substantially year by year between 2002 and 2008 with the increasing oil output and price (table 2). Our follow-up interviews in May 2010 regarding the declining global oil price and its impact revealed interesting facts. The Sudan was impacted relatively little by the fall in oil price after 2008, because its oil exports were managed under long-term contracts in which the price paid for oil export from the Sudan gradually increased irrespective of the world market price, ensuring the stability of oil income.

Compared with the financial crisis, the presidential election in 2010 was perceived to have far more negative impacts on the Sudan's economy in 2009 and 2010, as reflected in the data for year 2009 in table 2. Given the unpredictable result of the election, business activities including FDI "almost came to a standstill" before and during the elections (Sudanese entrepreneur interviewed on 29 May 2010).

Another direct impact is the employment and training provided for locals. Employment localization and training have been kept as a central issue and paid particular attention during more than 10 years of CNPC's operation in the Sudan. Three major reasons can be identified. One is that with growing experience of dealing with TNCs, the Government of the Sudan has become much stricter in requiring TNCs to use local human resources. The previously relaxed terms and conditions regarding employment in FDI contracts have changed to the current explicit requirement of at least 50% – in some cases as high as 95% – for local employees (Sudanese interviewee who participated in the negotiation in 1996 with CNPC, 5 May 2008). Another reason is that CNPC understands the importance of meeting such demands for its long-term success in the Sudan as well as in other countries. Finally, the resulting cost advantage will be important as China's own labour costs increase. Table 3 presents CNPC's employee localization, showing an average of 73% in GNPOC, the CNPC-led Consortium, by 2008 based on

Table 2. The Sudan economy in figures 2002-2009

Year	2002	2003	2004	2005	2006	2007	2008	2009
Population (Million)	32.7	33.6	34.5	35.4	36.3	37.2	39.2	40.3
GDP Per Capital (US\$)	474	572	619	703	831	1247	1480	1356
Inflation %	8.3	7.7	8.5	8.5	7.2	8.1	14.3	11.2
Growth Rate of GDP (%, in current prices)	6.5	6.1	9.1	8.3	9.3	10.2	6.8	4.5
Exports (FOB) (US\$ million)	1949	2542	3777	4824	5656	8902	12480	7834
Imports (FOB) (US\$ million)	2152	2536	3586	5946	7104	7722	9097	8528
Agricultural Sector Contribution to GDP %	46.0	45.6	39.2	26.6	39.2	28.9	31.0	31.2
Industrial Sector Contribution to GDP %	23.1	24.1	28.0	33.3	28.3	33	31.4	23.8
Services Sector Contribution to GDP %	30.9	30.2	32.8	40.2	32.5	38.1	37.6	45
Governmental Revenue (US\$ million) (2)*	2991	2814	4095	4873	6030	9578	12635	8504‡
Southern Sudan Net Oil Revenue Shares (US\$ million)				814	1216	1662	2938	1060‡

Sources: Central Bank of Sudan, 2008, May 2010.

Notes: * Converted from Sudanese Dinar (SDD) at US\$1= 250 SDD; ‡ Estimates.

the CNPC source. Our follow-up interview in May 2010 with a Sudanese entrepreneur, who was familiar with the overall “Sudanization plan” designed by the Government of the Sudan, provided the following data: by May 2010, the Sudanization ratio (percentage of the Sudanese in the total employees) was 93% in GNPOC, 90% in PDOC, 85% in Block 6, and 84% in Petronas-run WNPOC 84%⁶. This is consistent with the figures provided by CNPC. Interestingly, we discovered that lower skilled jobs in GNPOC had a lower level of localization, compared with higher skilled jobs. This result matches the findings at other Chinese firms in the Sudan, which all complained that applicants for lower-level jobs were more difficult to find, due to the lack of experience and communication skills of local people, many of whom are unable to speak English.

Three styles of training have been provided in CNPC for local employees: on-site training, training in CNPC’s headquarters in Beijing

⁶ WNPOC is managed by Petronas and there are no Chinese employees in this company. So this figure refers to the fact that the Sudanese account for 84% of the total employees and the Malaysians account for 16%.

Table 3. CNPC's employment localization in the Sudan

Name	Chinese	Sudanese	Localization (% of Sudanese to total)
CNPC as operator			73 (average % as operator)
1 Block 1/2/4	32	1200	93*
2 Block 3/7	52	902	88
3 Block 6	88	286	66
4 Block 15	8	25	63
5 Block 13 **	8	14	45
6 Khartoum Refinery Corporate	375	795	68
7 Khartoum Petrochemicals	34	189	59
8 Petrochemical Trading	4	131	97
CNPC's subsidiaries as contractors **			59 (average % as sub contractors)
1 Oriental Exploration	145	1453	91
2 Pipeline Administration	321	96	23
3 Engineering Construction	1515	282	16
4 Greatwall Drilling	745	1263	63
5 Logging Corporate	145	412	74
6 Liao He Oil Exploration	56	274	83
Total average			66

Sources: CNPC, 2008; A Sudanese interviewee, May 2010.

Notes: * Data in 2008 and again in May 2010. ** Data by Feb 2008.

and overseas investment sites, and selecting those with potential to study in China and return to work in the Sudan. For example, since 1998, CNPC has spent \$1.5 million to enable 35 Sudanese students to study and obtain degrees in Petroleum at the University at Beijing (CNPC, 2008, pp. 4–5).

Indirect impacts

The indirect impacts of CNPC's investment in the Sudan are best represented by its linkage effect. FDI in oil is often criticized for contributing little to development due to limited linkage opportunities. Because of the large volume of investment involved and the relatively low transportation costs of the end products, oil majors have been reluctant to establish petrochemical plants in developing countries (Oman and Chesnais, 1989). It has been difficult to encourage oil TNCs to develop downstream activities where and when it is in the host country's long-term economic interests. In this regard, CNPC's impact

on the Sudan's economy arises not only from its oil exploitation, but also from its petrochemical business.

As early as in March 1997, CNPC and the Government of the Sudan officially signed the general agreement on jointly investing and constructing Khartoum Refinery Co. Ltd (KRC) with each party holding a 50% share. KRC began its operation in 2000 with a refinery capacity of 2.5 million tons, which was expanded to 5 million tons by 2006. The refinery was entirely designed and constructed by Chinese firms, with key equipment brought from China, France and Germany. CNPC acquired international technology to deal with wasted oil at this refinery to meet the environmental standard set by the host country as well as the international standard. Its production capacity can meet demand of not only the entire Sudan, but also a small amount of export. Petrol stations in Khartoum are run by a wide range of global companies including Shell, Petronas and CNPC, offering much lower prices than the global market. According to the Agreement signed by the two sides, CNPC was required to transfer all its technology required for the operation of KRC to local enterprises within eight years. To meet this requirement, training for local employees was provided in the Sudan and China. A Chinese executive admitted that this was a difficult task, and was concerned about the safety of the refinery after the transfer. According to this executive, the problem was due to the country not having experienced industrialization and to the lack of public understanding of factory disciplines.

Petrochemicals are considered an important downstream business of the oil industry, and key to providing inputs for diverse industries, leading to development of manufacturing. CNPC helped establish Khartoum Petrochemical Ltd, alongside the refinery. At the peak time, 340 employees worked at the factory, of which 89 were Chinese, 35 Bangladeshi, and 216 local. One Sudanese employee stated that he resigned from his previous primary school teacher position to work in this factory because of the higher salary. He was paid \$300 per month given his site manager role, while his Bangladeshi colleague was paid \$250 per month and drivers \$800–900 per month. Although still small (52 tons/day) this factory is already able to meet the domestic demand for woven sacks. The executive revealed that the factory would soon be expanded in order to develop ethylene products, another highly demanded business in the Sudan,

Table 4 Capital invested by Sudanese and foreign investors for the period 2000 – 2009 (Million US\$)

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
By Sudanese investors	Industrial	287	696	399	1083	1458	2967	3123	4757	8435	3847
	Services	579	931	778	1908	2026	6372	7079	6429	11212	2941
	Agricultural	20	25	12	38	36	184	144	108	252	97
	Total	886	1652	1189	3029	3520	9523	10346	11293	19897	6885
By foreign investors*	Industrial	73	426	566	351	348	973	1669	3037	1025	845
	Services	229	281	344	275	527	2216	1115	1603	3951	1917
	Agricultural	10	3	57	156	4	16	200	381	176	653
	Total	312	710	967	782	879	3205	2984	5020	5151	3414

Source: Ministry of Investment, the Sudan, May 2010.

Notes: * Capital invested by foreign investors includes those partnerships between foreign and domestic investors.

There are other linkage effects, too. With the increased development of the oil and petrochemical industry in the country, domestic firms have grown and played complementary roles. The oil consortium for Block 17 was led by the Sudanese and the CEO worked with GNPOC and is able to operate this new oil consortium. The service company Red Corporate, whose CEO was also a Sudanese worked in GNPOC, provides project management services to large oil companies, previously just in the Sudan but now in other African countries as well. This further stimulates the increase of equipment suppliers such as DAL Group, the top indigenous private company in the Sudan.

Interestingly, many highly qualified and experienced Sudanese living abroad have returned to the country since 2003 to explore the opportunities in the booming domestic economy. Table 4 demonstrates the rapid rise in domestic investment from 2000, especially in the industrial and service sectors, indicating linkage effects.

4.4 Diversification effort and the cascade effect in non-oil industries

Previous literature claims that the resource curse could be overcome and development would be achieved if the host government were able to use the resource income wisely, e.g. establishing oil stabilization funds and diversifying FDI to important non-oil industries.

The Government of the Sudan has set up a stabilization fund, the Oil Revenues Stabilization Account, which, by late 2008, was among the 50 largest such funds globally. Meanwhile, during the last decade, a wide range of projects have been started or completed by government re-investment of the oil revenue. Among the Government Development Programme between 2000 and 2005, investment in agriculture was increased from \$6 million to \$47 million, in infrastructure from \$2.5 million to \$17 million, in social welfare including education and health from \$1.4 million to \$7 million (Ministry of Finance, Sudan, 2008). In addition, as the booming economy attracts a new influx of foreign and domestic investment, the Government has encouraged investors to enter non-oil industries.

Oil Revenue Stabilization Account

In oil-rich developing countries, the oil industry is playing an increasing role in how a country's oil and gas is extracted, where the revenues go, and how the general public will benefit. An oil fund is considered important for managing oil revenues for long-term development, as well as for overcoming the "Dutch disease" of rising exchange rates that could choke off non-oil industrial development. One function of an oil fund is to keep the economy stable by making investment expenditures within the economy counter-cyclical. In practice, developing countries like the Sudan are expected to keep a large proportion of their natural-resource funds in safe foreign investments (e.g. US dollar bonds), as it preserves their value and avoids the risk of currency appreciation. The econometric estimation results from a 30-year panel data set of 15 countries with or without an oil fund suggest that oil funds also deliver macro-economic benefits, being associated with reduced volatility of broad money and prices and lower inflation (Shabsigh and Ilahi, 2007).

The Government of the Sudan set up its Oil Revenue Stabilization Account in 2002, with an asset amounting to \$24.6 million in 2007, \$122.4 million in 2009, and an estimated \$122.4 million by April 2010 (IMF, Ministry of Finance of the Sudan, cited in Lim, 2010). There is no evidence that the Government of the Sudan has used this account for current spending. There has been an international scrutiny on the Sudan's oil revenue and its role in the civil conflict. Setting up such a transparent fund would be positive for the country in its effort to attract donors (Melby, 2002).

Investment in infrastructure

As of 2002, the Sudan had 5,995 km of rail track but more than 90% of the track was out of use due to civil war damage and lack of maintenance. The overall road system was 11,900 km, of which 4,320 km was paved, in a country of 2.5 million km². Crucially, there was only one major road, the Khartoum-Port Sudan road, which accounted for 1,197 km and was completed in 1980. However, the Sudan's infrastructure construction began to speed up since 2002 due not only to the rising oil revenue, but also to the availability of international investment and loans for which oil export was a precondition. Another high quality road between Khartoum and Merowe Dam, stretching more than 2,000 km, was completed in 2008. Port Sudan, the sole port of the country, has been upgraded. Several power plants have been constructed and put in use, leading to a lower frequency of power cut. The project of the Merowe Dam on the Nile is a case in point. This is the largest hydropower project in Africa. The purpose of the project is power generation, water supply for irrigation and flood control. By 2005 in Sudan, the power generation capacity of only 600 MW was available for about 35 million people, which was less than 20 Watts per person.⁷ Insufficient funding and the lack of investor interest stalled the project for several decades. After 2000, a greatly improved credit rating brought an influx of foreign investment. The total investment (including spending on migration) was estimated about four billion euros, of which a large proportion was funded by foreign investors (table 5).

Table 5. Major investors in Merowe Dam construction project*

No.	Investor	Fund (in millions of US\$)
1	Government of the Sudan	575
2	Government of China	520
3	Arab Fund for Economical and Social Development.	250
4	Saudi Fund for Development	200
5	Abu Dhabi Fund for Development	150
6	Kuwaiti Fund for Economical Development	150
7	Sultanate of Oman	106
8	State of Qatar	15
	Total	1966

Source: Merowe Dam Construction Committee, the Sudan, 2010.

Note: *Funding contributors for migrations compensation due to dam construction are not listed.

⁷ This is about one fifteenth of their Egyptian neighbours, and less than one hundredth of the OECD average.

The contracts for the construction of the dam were signed in 2002 and 2003. The dam's power generation capacity was 1,250 MW, doubling the national capacity. Chinese company Sinohydro was contracted to construct the dam while ABB provided power equipment. At its peak, this dam construction required 5,000 employees, of which 2,500 were local. The dam was completed and started generating electricity in 2009, significantly easing the country's longstanding power shortage.

Investment in agriculture

The Sudan is an agricultural country. An internal 2008 report by the Government of the Sudan shows that in 2008, agriculture provided 40% of its GDP, 65% of its employment, and 80% of its non-oil export income. Before oil export began in 1999, agricultural export was the sole source of foreign exchange. Although rich in land and water, the Sudan's agriculture was underdeveloped due to the civil war as well as the lack of capital, equipment, electricity, water supply (with no adequate connections to the Nile) and technology to improve productivity (Internal document, 2008). The Government has realized the importance and huge potential of this sector, stressing "agriculture is Sudan's another oil" and set year 2009 as "Agricultural Year", together with a grand development plan 2007–2010 to attract future investment.

Local companies like Dal Group have suffered from high import price for agricultural products which are major inputs of their food and soft drink businesses. Dal has said it is extremely keen to cooperate with Chinese companies like COFCO to develop agriculture business, possibly even a bio fuel business. Chinese TNCs also play an important role in the sector by providing agricultural equipment, as seen in Dal's storage.

Furthermore, farms were set up by Chinese entrepreneurs when they realized that there is demand among Chinese workers in the Sudan for certain vegetables that are not produced locally. They started to set up farms to produce these vegetables. One farm the author visited in the suburb of Khartoum was run by a Chinese woman, who came to the Sudan as a doctor, but turned herself into a farmer when sensing the lack of local supply. She hired about 30 employees in her farm, who were all local except for two farm technicians hired from a Chinese

agricultural science academy. She hired local employees because of “lower cost and constraint by migration rule”, as she was allowed to hire two employees only from China. There were two other farms in Khartoum run by Chinese when she started five years ago, but by 2008 there were more than 10 in the region. These farms supply agricultural goods to not only Chinese companies but also local markets.

5. Discussion and conclusion: development implication

5.1 Development implication

Since the Sudan started to export oil in 1999, significant changes have taken place in its economy. It has one of the fastest growing economies in Africa (second only to Angola, another resource-rich country now emerging from civil war), with an average annual growth rates of more than 9% between 2005 and 2009 (see table 2). By regional and even global comparison, this represents exceptional economic growth. The Government is making use of the economic growth as foundation to promote development, including setting up a resource-stabilization fund, diversifying investment to non-resource sectors, encouraging domestic investment, installing much improved infrastructure including electricity and water supply, ending the decades long civil war with the oil revenue sharing agreement, and promoting free movement between the south and north of Sudan, which had been deeply divided as a result of European colonial intervention long before China’s arrival. It can be further demonstrated that these positive developments were achieved through the interaction between FDI and host institutions.

5.2 How TNCs’ capacity, strategy and mindset fit the local needs

Our case study indicates that investment by developing country TNCs in another developing country does provide good fit between TNCs’ goals, strategy and mindset and development needs of the host country, as well as between TNCs and host institutions. We discovered that CNPC and the Sudan met each other’s needs for the following reasons.

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- (1) Table 6 shows that since 2003, China has climbed to the third position in oil importation and is now close to Japan as the second largest oil importer. Chinese imports increased rapidly from 1.9 million barrels per day in 2000 to approximately 3.8 million barrels per day in 2006 (ENI, 2008). The Sudan is able to provide China 8% of its total need (Bank of Sudan, 2008).
 - (2) While the Sudan has plenty of oil, it lacked the capital and capability to turn the resources into national wealth and long-term development. CNPC provided them, enabling oil exploration and a successful start of oil exports.
 - (3) While the Sudan was under international sanctions and Western firms were reluctant to invest in the Sudan, CNPC was willing to invest, having taken into account of not only the close relationship between the two countries, but also the difficulty of accessing oil resources in the global market. This latecomer disadvantage impedes CNPC's global strategy and compels it to pursue investment in areas which longer-established TNCs have written off as geologically or politically unworkable.
 - (4) Concerned about developing country TNCs' less advanced technological and managerial capabilities, the Sudan hires developed country TNCs to supervise developing country TNCs. It has concluded a production sharing agreement with foreign investors and applies international health, safety and environment (HSE) standards to achieve both quality and cost efficiency. To avoid poor institutions harming its long-term interests in the host country, and with the strategic intent to learn international management skills, CNPC is willing to work under such supervision as the production sharing agreement also sets obligations for host countries, e.g. providing a safe investment environment.
 - (5) Given the large amount of investment CNPC has every reason to demand good governance to ensure a higher return on its investment. To do so, the company does not directly criticize the host institutions but persuades the host government to improve by demonstrating attractive prospect on FDI's benefits to the host economy. The host government, on the other hand, has realized the "necessary and urgent" need to establish formal laws and regulations to benefit from FDI (official at Sudanese Ministry of Energy and Mining, interviewed in April 2008). For example, the Ministry of Energy

and Mining published for the first time an “Investor Manual on Energy and Mining Fields” in 2006 to inform and instruct potential investors, which also lists detailed information on oil blocks for potential investors (table 7 is one example). Furthermore, improving efficiency and addressing the problem of corruption have also been considered by the host government as necessary for attracting potential investors and keeping existing investors in the Sudan. Most importantly, understanding that a peaceful environment is vital for attracting FDI, the Governments and the rebels in the south eventually signed the Comprehensive Peace Agreement in 2005, by allowing the south to share 40% of the oil revenue.

Consequently, the mutual benefits brought not only much improvement to the capabilities of both sides but also the better understanding and deeper cooperative relationship. CNPC has accumulated rich experience in working in a least developed country, while the Sudanese gained experience of managing natural resources and of ensuring more local benefits from TNCs.

**Table 6 The top ten oil import countries in the world
(thousand barrels/day)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
United States	9710	10428	10945	11084	11716	12120	11805	12562	13482	13947	13841
Japan	5615	5519	5265	5263	5377	5042	5125	5168	5106	5233	5127
China	841	1305	1094	1238	1886	1754	1975	2572	3383	3346	3834
Germany	2995	2997	3082	2889	2917	2977	2825	2851	2884	2946	2934
Rep. of Korea	2514	2849	2664	2827	2934	2851	2694	2666	2720	2697	2823
Netherlands	1866	1943	1945	1932	2105	2153	2129	2155	2318	2506	2658
India	1076	1142	1267	1488	1667	1714	1775	1960	2077	2218	2464
France	2152	2179	2309	2227	2308	2281	2243	2320	2353	2426	2355
Singapore	1716	1768	1707	1690	1622	1678	1705	1655	1895	2128	2349
Italy	2166	2189	2266	2162	2210	2145	2165	2188	2164	2179	2137
Top 10 countries	30651	32319	32544	32801	34742	34715	34438	36096	38381	39626	40522
Rest of the World	18202	19159	19530	19321	19925	20516	20715	21259	22771	23202	23706
World	48853	51478	52073	52121	54667	55232	55153	57355	61152	62829	64228

Source: ENI, 2008.

5.3 The unique role of Chinese TNCs in the Sudan's development

While this paper has provided some insights on the contribution of Chinese investors to development in the Sudan, this still leaves open the question of whether this is the best alternative for the Sudan. As noted above, China has never been the sole investor in the Sudan. Before Chinese investors entered the country in the late 1990s, Western oil firms had been exploring for oil in the Sudan for decades. Since the arrival of Chinese oil firms, TNCs including most of the top oil firms from developing countries have been working with the Chinese on projects such as GNPOC. As observed by the United Kingdom Department for International Development (DFID), Chinese investment in the African oil sector is growing rapidly, but it is still a small player. The accumulated investment by TNCs in Africa is \$170 billion, of which China has invested just \$17 billion (DFID, 2008). It is therefore reasonable to assume that other investors could also contribute to promoting Sudanese development. Indeed, besides CNPC, there are a large number of global and national oil companies investing in the Sudan (table 7).

Data on other relevant investors in the Sudan collected for this study enable a comparative view of the Chinese contribution. To supplement past comparisons, questions comparing CNPC with Western oil firm (mainly Chevron) and other developing country oil firms (mainly Patronas and ONGC) were raised with interviewees working for the Ministry of Energy and Mining; GNPOC; local firms partnered with these firms; and the general public. Data collected indicate that Chinese investors have several features which enable them to make a unique contribution to the Sudan's development.

First, Chinese investors are more willing to take risk. Here, comparison with Chevron is especially revealing. Chevron was granted its oil concession in 1974 and discovered oil in 1978. The Shell (Sudan) Development Company Limited subsequently took a 25% interest in Chevron's project. Together, the companies spent about \$1 billion in extensive seismic testing and the drilling of 52 wells (Talisman Energy, 1998, p. 4.). However, Chevron suspended its operation in the Sudan by the end of 1984 and eventually withdrew. According to John Silcox, the president of Chevron's overseas operations at the time, withdrawal was made because they did not want to expose their employees

Table 7. An overview of the oil operating companies and their shareholders in the Sudan

Operators	Shareholders (% of shares in bracket)	Block
Greater Nile Petroleum Operating Company (GNPOC).	CNPC (40%), Petronas (30%), ONGC (25%) & Sudapet (5%)	Blocks 1,2 & 4
Petrodar Petroleum Operating Company (PDO).	CNPC (41%), Petronas (40%), Thani (5%), SINOEC (6%) & Sudapet (8%)	Blocks 3 & 7
White Nile Petroleum Operating Company (WNPOC).	Petronas (68.875%), ONGC (24.125%) & Sudapet (7%)	Block 5A
White Nile Petroleum Operating Company (WNPOC).	Petronas (39%), Lundin (24.5%), Sudan CNPC (95%) & Sudapet (5%)	Block 5B
Petro-Energy Operating Company.	China National Petroleum Company International, Sudan CNPC (95%) & Sudapet (5%)	Block 6
White Nile Petroleum Operating Company (WNPOC).	Petronas (77%), Sudapet (15%) and Hi Tech (8%)	Block 8
Sudapak Operating Company.	Zaver Petroleum Co. Ltd. (85%) and Sudapet (15%)	Block 9,11 & A
Sahara Oil Company.	Alqohtani & Sons (33%), ANSAN WIKFS (20%), Sudapet (20%)	Block 12A
Coral Petroleum Operating Company.	CNPC red sea, Pertamina, AfricaEnergy, Epress oil, Sudapet and Dinder Group	Block 13
Salima Oil Company.	PetroSA (80%) & Sudapet (20%)	Block 14
Red Sea Petroleum Operating Company (RSPOC).	CNPC, Petronas, Sudapet, Hi Tech., The Nigerian Express Oil	Block 15
International Petroleum Company in Sudan Limited (IPSL).	Owned by Lundin (100%)	Block 16
Star Oil Company.	ANSAN WIKFS (66%) and Sudapet (34%)	Block 17
TOTAL Exploration – Sudan.	Total Exploration (32.5%), Marathon Petroleum (32.5%), Kuwait Foreign Petroleum Exploration Co. (25%) & Sudapet PC (10%)	Block B
Advanced Petroleum Operating Company (APCO).	PanEnergy Oil & Gas (32.5%), Hi Tech (32.5%), Sudapet (17%), Khartoum State (10%) and Heglieg (8%)	Block C

Source: Oil Exploration & Production Authority, Ministry of Energy & Mining, the Sudan, 2008.

to “undue risk” in the middle of a civil war zone.⁸ The fact that Chevron’s employees were attacked several times by the southern rebel groups⁹ was the direct cause of the company’s suspension of

⁸ *Wall Street Journal*, 1 November 1984.

⁹ Civil war between the southern and northern Sudan started well before 1970s when Chevron discovered oil. The Addis Ababa agreement of 1972 that ended the first civil war in Sudan provided qualified rights for the autonomous southern regional government to receive revenues accruing from mineral and other natural resources in the South. At the time of the agreement in 1972, no one was aware of oil deposits in the south. After the discovery of oil in 1978, southerners feared that the government, always dominated by the northern elite, would deny the south jobs and other benefits. More conflicts between the south and north took place (Alier, 1973, p. 244).

operations, but interviewees in the Sudan believed that the low global oil price and availability of better quality oil reserves around the world in the mid-1980s also played a part in Chevron's decision. CNPC, on the other hand, took the risk of entering the Sudan in 1995 when civil war had stopped but conflicts between the south and the north persisted. The Chinese deployed a different approach to dealing with the risk, including encouraging the peace process and sharing the oil revenue between the rebels in the south and the Government. Most Chinese interviewees including the Commercial Consul believed that poverty is the fundamental cause of the conflicts in the Sudan, and stimulating the economic development will contribute to the peace process if a fair deal on oil revenue sharing can be reached.

Second, Chinese TNCs are willing and able to work on low-margin projects, which enables the Sudanese to implement more affordable projects. Chinese bidders for sub-contracts in the oil and infrastructure sectors could offer prices one third lower than their Western and even Malaysian and Indian counterparts. This was further supported by the lower cost of labour and equipment in China. For example, CNPC's engineers in the Sudan are paid less than one third of the salary of their Western counterparts such as Schlumberger and are entitled to much fewer holidays. Although Malaysian and Indian TNCs may have a wage level as competitive as Chinese TNCs, they do not enjoy the great advantage of cheap and reliable supplies of equipment available in China.

Third, CNPC has technology, human resources, equipment and efficiency to provide a comprehensive service covering oil exploration, refining and petrochemicals, and therefore offer the foundation for sustainable development of the Sudanese oil industry. It was noted that well before the Chinese entry, the Government of the Sudan had a vision to "build up the integrated Sudan Petroleum Industry and make the oil industry the engine of Sudan's economy" (CNPC, 2006). Such an integrated Sudan Petroleum Industry was envisaged to have upstream exploration as well as downstream petrochemical production for export via pipeline. CNPC was able to provide all the technology and equipment needed to realize this vision. Other TNCs in the Sudan including Petronas and ONGC are able to provide most of the required technology and equipment, but it is questionable whether they would have provided the same technology and equipment at

the same price and more importantly, completed the projects within the same time frame. CNPC has achieved several world records in the oil industry in terms of the speed of construction in the Sudan. The company built a 15 million ton oil field in one and a half years. It also succeeded in establishing a pipeline totalling 1,500 kilometres in 11 months and took only two years to set up the Khartoum Refinery with a processing capacity of 2.5 million tons of crude oil. The Chinese and Sudanese interviewees who participated in the projects attributed such speed to China's centralized and integrated corporate system and the Chinese hardworking spirit. While Western TNCs tend to spin off non-core businesses and make strategic use of outsourcing, many Chinese TNCs still keep an integrated structure with hundreds of thousands of employees. CNPC had 1.67 million employees across all oil-related businesses by 2009. This structure, which is often viewed by organizational analysts as disadvantageous, turns out to be effective in mobilizing all the capabilities to complete comprehensive oil projects in a short time period. One Sudanese manager in GNPOC compared CNPC with Petronas and ONGC. He concluded that efficiency is the major difference between the three companies and further elaborated that while CNPC was very quick in decision-making, Petronas and ONGC would arrive at decisions "slowly" and inevitably "lost many opportunities". It was also revealed that the 1,500 km pipeline project was initially contracted to an affiliate of Petronas, but had to allow a CNPC unit to take over after failing to meet the deadline set by the Government of the Sudan.

Finally, CNPC as the largest State-owned oil firm in China considers itself to have the obligation to maintain good relationship with the Sudan and also to protect "China's image". At the same time, it also enjoys strong support from the Government of China and State-owned banks. Given these obligation and support, Chinese managers are able to use long-term strategy to develop relations with the host institutions. Counterparts from the West and Petronas and ONGC are more constrained by short-term considerations including profit maximization. For example, while CNPC could make a huge financial commitment to the Sudan with Government and bank support, Petronas and ONGC have less support from their respective Government and more constraints from their shareholders. Both companies are investing in several oilfields, but none of them could make funding, equipment,

engineering and efficiency commitments to the Sudan comparable to CNPC's.

5.4 Propositions for future research

Rapid and sustained economic growth is only the first step towards development. FDI appears to have played a role in the Sudan's development, but it remains insufficient, with its benefits heavily dependent on continued appropriate co-evolution of TNCs and host institution strategy.

Further research is needed for a better understanding of the development implications in the Sudan, especially of the Government's plans for education, health, for non-oil sectors like agriculture, for oil income distribution, and for the institutional environment including tax and other FDI policies. Recent events also necessitate an examination of the impact of global financial liquidity constraints and the rapid oil price decline since mid-2008, even though the current crisis only partly contributes to the reduced oil revenue and FDI in the Sudan (as shown in tables 2 and 4). The country's peace was achieved largely because the Government agreed to share the oil revenue with the south. The negative impact on FDI and the entire economy arising from the potential instability at the time of the Sudan's 2010 presidential election indicates that stability is of paramount importance to the Sudan's development. Above all, this is a necessity to improve both FDI strategy and the country's capacity and the institutional environment so that the Sudan could not only attract FDI but also maximize the benefit of FDI.

The following propositions are therefore considered important for further research:

P1: The Sudan's development will be adversely affected by the impact of global financial liquidity constraints and the rapid oil price decline.

P2: The Sudan's development will take off as long as the country successfully channel oil profits to the manufacturing and service sectors, and ensure the continuing growth of these sectors.

P3: The Sudan's development will take off as long as the FDI has produced sufficient linkage and spillover effects, while local human capital is ready to take use of the opportunities.

P4: The Sudan's development will take off as long as the peace can be kept and Darfur issue can be resolved.

P5: The Sudan's development will take off as long as FDI works hand in hand with host institutions.

This investigation, although taking the Sudan as a detailed case-study, may provide some development implications for the expansion of China's investment in Africa as a whole. According to the *World Investment Report 2009* (UNCTAD, 2009, p 42), the number of policy measures adopted by several African countries continued to make the business environment more conducive to the FDI. The Sudan's case is consistent with this observation. The case of the Sudan may also have implications to other developing countries as this is a typical case of South-South FDI. Despite some positive effects of the FDI on the Sudan's economy, it is important to emphasize the contextual nature of the impacts observed and the limitations of the information available. At the same time, the commercial and social impact of Chinese TNCs and their role in shaping more inclusive local policies stand in contrast to the generally negative portrayal of China's political involvement in the Sudan. There are identifiable links between Chinese-led oil development and the move towards resolving the internal conflicts.

In addition to facilitating understanding of Chinese involvement in Africa, this paper may also make some theoretical contributions to international business research on the development implication of developing country FDI. It demonstrates that developing country FDI can make positive contributions to development particularly in developing countries, due not only to its capacity appropriate for developing countries, but also to its strategies and mindset more adaptable to the development needs and institutional environment in the host country. While current researches often emphasize how institutions make FDI's impact on host country differ (e.g. Boudier-Bensebaa, 2008) and how institutions in developing countries should be improved in order to attract FDI,¹⁰ this research indicates that TNCs' proactive adaptation of strategy to fit local needs and institutions may be more effective for improving institutions and consequently the development in host countries.

¹⁰ e.g. the argument of "governance matters" (Hout, 2010).

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