

Assessment of the Impact of Oil: Opportunities and Challenges for Economic Development in Sudan

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Abstract

This paper assesses the effect of oil on economic development in Sudan and discusses related opportunities and challenges. We provide a comprehensive analysis using the most recent secondary data, with a view to clarifying the positive and negative effects of oil on Sudan's economic development. We support the view that oil has had a mixed blessing on the Sudanese economy, arguing that oil is an important resource, particularly in satisfying domestic consumption and the achievement of self sufficiency by increasing public sector revenues. Although oil has helped to improve economic performance in the country, we find that the recent dependence on oil may spark other problems because it is an exhaustible resource and the instability of oil prices in the international market could produce uncertainty in domestic growth. Moreover, the increasing dependence on oil raises the possibilities of a 'Dutch Disease' and a lack of diversification, which may aggravate challenges linked to the division of the country and the potential for conflict with newly independent Southern Sudan.

1. Introduction

The exploration and exploitation of oil in Sudan has accelerated economic growth and the structural transformation of the economy recently. According to the World Bank (2008) Sudan is one of the newest significant oil producing countries in the

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World, and the third largest oil producer in Sub-Saharan Africa after Nigeria and Angola. As a result of oil exploitation, the structure of the Sudanese economy has shifted from being predominantly reliant on agriculture to oil.

In recent years the increasing dependence on oil has led to stable economic growth. Consequently, Sudan's real economic growth averaged around 9% during (2005-2006), putting Sudan among the fastest growing economies in Africa (WB, 2008). But while oil has recently contributed to the improvement of economic performance and Foreign Direct Investment (FDI) in Sudan, the recent heavy dependence on oil presents challenges to policy makers, partly because oil is an exhaustible resource and, mainly because the revenue from oil is uncertain and very volatile in international markets. Moreover, the increasing dependence on oil raises questions such as the incidence of a Dutch Disease phenomenon¹. This paper investigates the impact of oil on economic development in the Sudan. Drawing recent macroeconomic indicators on the performance of the economy and certain structural shifts, we argue that oil has had a mixed blessing for Sudan.

The rest of this paper is organised in the following way. Section 2 explains the general socio-economic characteristics of Sudan. Section 3 examines our hypothesis on the positive and negative impact of oil in enhancing economic development in Sudan. Section 4 concludes.

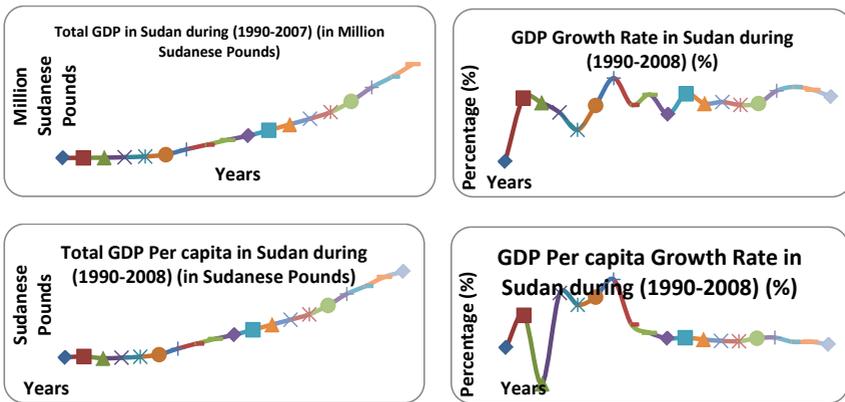
2. General socio-economic and political characteristics of Sudan

The political context in Sudan is characterised by a long history of political instability, continuing civil wars and the complex north-south conflict. Even after the recent independence of Southern Sudan, Sudan still endures political instability, a lack of sound institutions and a lack of a commitment to implementing long-run sustainable and balanced economic development plans.

The general socio-economic characteristics of Sudan indicate great diversity between Sudan compared to other African, Arab countries in terms of population, standard of economic development defined by GDP per capita and human development. On average Sudan has a higher population coupled with a lower standard of economic development. The UNDP and World Bank classification of economies puts Sudan among the lower middle income bracket and among poor and highly indebted economies. Moreover, the United Nations Development Programme – Human Development Index (UNDP-HDI) shows that the average life expectancy, literacy rate and combined enrolment ratios of Sudan are lower than those of other Arab countries. Furthermore, Sudan has continued to suffer from macro-economic instability, high rates of poverty, unemployment and debt.

The structure of the Sudanese economy has long been characterised by a small share of industry, notably manufacturing; a high share of agriculture and service sectors in GDP and employment (see Table 1). In 1999 Sudan began exporting oil and since then has become increasingly dependent on oil exports to the extent that the economy has turned into an oil dependent economy.² Since the late 1990s the implementation of macro-economic reforms along with the positive contribution of oil to the Sudan economy has caused a rapid increase in real economic growth (see Table 1 and Figures 1-4). Consequently, Sudan has moved from a low income economy into a lower medium income economy according to World Bank classification. But while the increasing dependence on oil has had some positive effects, it has also sparked a number of negative impacts and raises questions such as the incidence of a Dutch Disease phenomenon as we explain in the next sections.

Figures 1- 4: Growth Rates of GDP and GDP Per Capita (1990-2008)



Source: Adapted from Sudan Central Bureau of Statistics: Sudan Ministry of the Cabinet-central bureau of statistics: Sudan statistical year book: Sudan statistics 1990- 2008: pp. 39-43

3. Overview of oil in Sudan

Based on the above background on the socio-economic characteristics of the Sudanese economy and since the structure of the Sudan economy is now closely linked to oil, this section examines the hypothesis of mixed positive-negative impact of oil in the Sudanese economy. Before explaining the positive and negative impact of oil on the Sudanese economy, it is useful to start with a historical background about the structure of investment in oil and show the role

Table 1 – The Performance, Structure and Structural Change in Sudan Economy (1990-2009)

Year	GDP			Inflation Rate	Exchange Rate	Balance of payment	Balance of Trade			Structure of Sudan Economy (share of sectors in GDP)		
	Total	Per capita Growth Rate	Per capita				Exports	Imports	Balance	Agriculture	Industry	Services
1990	244.7	5.4	47.7	0	0.45	-76.1	374	618.4	-244.4	30.3	15.4	54.4
1991	276.8	7.5	81	69.8	0.69	-101.3	308.7	890.3	-581.6	28.7	17.6	53.9
1992	4327.8	6.5	17.2	-78.7	9.7	-58.1	319.3	820.9	-501.6	33.7	17.1	49.1
1993	5862.1	4.5	37.6	118.4	16.1	37.7	417.3	944.9	-527.6	37.9	17.4	44.5
1994	6351.2	1	72.5	92.7	29.6	17.9	535.6	1059.6	-524	40.1	16.4	43.5
1995	9880.7	5.9	151.7	109.4	55.9	-58.1	555.7	1184.8	-629.1	43.1	15.8	41.1
1996	8259.3	5.9	375.9	147.7	125	-63.9	620.3	1504.5	-884.2	44.9	14.5	40.6
1997	10684.8	6.3	563.7	50	156.9	-36.2	594.2	1421.9	-827.7	47.6	15.1	37.2
1998	11513.7	6.4	743.7	31.9	198.8	25.1	595.7	1732.2	-1136.5	48.6	15	36.2
1999	10325	6.7	892.3	20	252	111.5	780.1	1256.2	-476.1	49.8	15.8	34.4
2000	11242.2	8	1,083.1	21.4	257.2	81.5	1807	1553	254	46.4	21.4	32.2
2001	12596.5	6.7	1,274.0	17.6	257.3	-90.04	1547	1457	90	45.6	22.8	31.6
2002	3924	6.5	1,457.4	14.4	236	198.72	1949	2179.22	-230.11	46	23.2	30.9
2003	4549	6	1,656.4	13.7	261	422.6	2542.2	2536.1	6.07	44	24.1	30.3
2004	5278	7.2	1,991.2	20.2	258	730.2	3777.75	3586.18	191.57	40	28.0	32.0
2005	6283	8	2,421.2	21.6	245.6	530.5	4824.3	5,946.0	-1121.7	39.0	28.0	32.0
2006	22,217.	10.0	2,719.0	12.3	2,0248	-208.6	5,656.6	7,104.0	-1,448.1	36.8	27.5	35.7
2007	22,21	10.5	3,059.2	12.5	2,0308	-282	8,879.2	7,722.4	1,156.8	35.3	30.6	34.1
2008	26.03	7.8	3,262.6	6.6	2,09	21.1	11,670.5	8,229.4	3,441.1	29.3	29.2	41.5
2009	27.63	6.1			2,32	-502.2	7,833.7	8,528.0	-694.3	31.1	23.9	45.0

Sources: (1) Ministry of Finance and National Economy, (2) Central Bank of Sudan (3) Sudan Central Bureau of Statistics; Sudan Ministry of the Cabinet- central bureau of statistics; Sudan statistical year book; Sudan statistics 1990- 2008; pp. 39-43.

of China in investment in the oil sector in Sudan.

3.1 Historical background of oil in Sudan

The major oil production fields are located in Southern Sudan but the major oil refineries, ports and pipelines are located in Sudan. Due to this conflict, oil exploration has mostly been limited to the central and south-central regions of Sudan. The institutional structure of the oil sector in Sudan indicates that the oil industry is regulated by the Ministry of Energy and Mining, yet the Ministry of Finance and National Economy and National Petroleum Commission are also involved. The Sudanese oil sector includes several foreign international oil companies with a long history of investing in oil exploration and production in Sudan.⁴ Foreign oil producing companies involved in Sudan's oil sector are primarily from Asia organised under the consortium of the Greater Nile Petroleum Operating Companies (GNPC) led by the China National Petroleum Corporation (CNPC), which owns the largest single share in the GNPC consortium 40%; followed by Malaysia's PETRONAS (30%); India's Oil and Natural Gas Corporation (25%), and the Sudanese Government's SudaPet company (5%).⁵

3.2 The role of China in the exploration, production and exportation of Sudanese Oil

As a major player in the Sudanese oil industry, China uses a combination of investment, trade, aid flows and diplomacy to maintain access to oil resources in Sudan.

In the period 2000-2007, Chinese investments have been largely concentrated in the petroleum sector (99.90%), as compared to industrial (0.07%), services (0.03%) and agricultural (0.0001%) sectors⁶. The importance of Chinese investment in the oil sector in Sudan compared to that of other Asian countries over the period 1999-2008 is demonstrated by China's large share in oil concessions (6%-95%), total oil investment (47.3%), up-stream oil investment (43.8%, down-stream oil investment (56.9%), oil pipe lines (47.6%), oil refinery (50%), petrochemicals (95%), oil refinery and petrochemicals (51%) and oil marketing, industry and manufacturing (12.5%) (See Table 2 below)⁷.

The significant Chinese investment in the oil sector in Sudan has spurred the trade relationship between Sudan and China, which in turn has benefited both the Chinese and Sudanese economies. Sudan's exports and imports amounted to US\$ 39.241million and US\$ 11.576 million in over the period 1997-2010. China's share of Sudanese exports and imports has amounted to 69.56% and 15.67% on

average during the period 2000-2010⁸. According to data from the Central Bank of Sudan for the period 2000-2010 China's share in Sudanese total exports to all foreign countries ranged from 44% to over 80%; its share in Sudanese total imports from all foreign countries ranged from 6% to over 30%; and its share in Sudanese petroleum exports to all foreign countries ranged from 58.87% to over 87.7%% (see Table 3 below).

Over the period 1999-2010 petroleum dominated Sudan's exports to China (99.4%), while non-oil exports to China represented only a small share (0.6%). China is therefore the largest importer of Sudan's petroleum (80.07%), leaving Sudan's petroleum exports to other countries at only (19.93%). Furthermore, the significant investment of China in the oil sector in Sudan motivated China to increase its aid and development assistance, loans and grants to Sudan. For instance, over the period 1999-2009 China's share of total loans and grants has ranged from 7% to 76%, as Table 3 shows, and the average share has increased over time⁹.

Table 2 – The Share of China in total Asian countries concession and investment, in oil sector in Sudan (1999-2008)

Items	China Oil Company	Share of China in total (%)
(1) Oil concession		
Greater Nile Petroleum Operating Company (GNPOC)	China National Petroleum Company (CNPC)	40%
Petrodar Petroleum Operating Company (PDOC)	CNPC	41%
Petrodar Petroleum Operating Company (PDOC)	SINOPEC	6%
China National Petroleum Company International Sudan (GNPCIS)	CNPC	95%
Group of Companies	PETROENERGY	40%
Red Sea Oil Company	PETROENERGY	35%
(2) Oil investment in		
(a) Up-stream oil investment	CNPC+SINOPEC	43.8%
(b) Down-stream oil investment	CNPC+SINOPEC	56.9%
Total up-stream and down-stream oil investment	CNPC+SINOPEC	47.3%
(c) Investment in oil pipe lines	CNPC+SINOPEC	47.6%
(d) Investment in oil refinery	(CNPC)	50%

(e) Investment in petrochemicals	(CNPC)	95%
(f) Investment in oil refinery and petrochemicals	(CNPC)	51%
(g) Investment in marketing, industry and manufacturing of oil	KANDOC PETROCHEMICAL	12.5%

Source: Sudan Ministry of Energy and Mining 2008

3.3 Overview on the oil impact, opportunities and challenges for development in Sudan

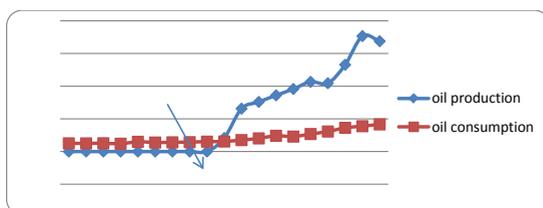
In this section we examine the impact of oil on the Sudanese economy. We first start with the positive impact of oil and the opportunities it presents for development, and then turn to the negative impact of oil and the challenges it raises for maintaining long run sustainable growth.

3.3.1 Oil and the opportunities for development in the Sudan

In discussing the positive impact of oil, we examine the effect of oil in satisfying domestic demand and achievement of self-sufficiency, increasing government resources, revenues and spending, economic growth (GDP growth and composition), foreign trade (volume and structure of exports), balance of trade, balance of payment, FDI and social development in Sudan.

Beginning with the impact of oil production, we find that the local production of oil created important positive effects and opportunities by enabling Sudan to gain self-sufficiency in oil by satisfying domestic demand. This in turn has saved the government foreign exchange/resources used to import oil and generated surplus revenues, which have funded other domestic needs¹⁰. Furthermore, the local production and exportation of oil implies that Sudan shifted from an oil importing economy into an oil exporting economy (see Figure 5 below). For instance, in 2001; more than half of Sudanese crude oil was exported (51%) while the rest was used to satisfy local consumption (49%).

Figures 5- Sudan's Oil Production and Consumption 1990-2008



Source: Adapted from Sudan Ministry of Energy and Mining Statistics

Table 3 – The Trend and Share of China in petroleum and total exports from Sudan and in total loans and grants to Sudan (1999-2010)

Share of China/ (%) in total	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 (January- March)	Average (2000- 2010)
Petroleum Export		58.87%	72.78%	85.03%	84.99%	80.64%	80.86%	82.30%	86.16%	78.85%	82.63%	87.7%	80.07%
Total export	0.07%	44.12%	59%	65.74%	69.31%	66.89%	71.04%	74.87%	81.95%	75.02%	75.77%	81.42%	69.56%
Total loans and grants	17%			7%	8%	7%	76%	24%	73%	3.35%	27.44%		
Average total loans and grants (1999-2007) (2007-2009) (1)	24%	24%	28%	33%	38%	45%	58%	49%	73%	38%	35%		

Sources: (a) Adapted from Sudan Ministry of Foreign Trade and Central Bank of Sudan Annual Foreign Trade Statistical Digest various issues (1999-2010); 2006: p. 20, p. 38, 2005: p. 38, p.20, 2004: p. 20, p. 39, 2002: p. 9, p. 24, 2000: p. 9, p. 24. (b) Adapted from the Central Bank of Sudan Annual Reports (1999-2007), Ministry of International Cooperation and Ministry of Finance and National Economy.

Note: (1) For calculation of the average share of China in total loans and grants (1999-2007) and (2007-2009) we use the year 2007 as a reference year because it witnessed the largest inflow of China aid and development assistance to Sudan over the period (1999-2009).

Table 4 – the impact of oil in Sudan economy and macroeconomic indicators in Sudan (1999-2010)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Revenue (% of GDP)	8%	11.5%	10.7%	11.9%	16.0%	19.7%	21.7%	20.0%	19.9%	19.3%	13.5%
Expenditure (% of GDP)	8.9%	12.2%	11.6%	12.8%	15.3%	18.2%	23.4%	24.3%	23.0%	17.8%	16.3%
Fiscal Deficit (% of GDP)	-0.9%	-0.7%	-0.9%	-0.8%	1%	1.5%	-1.8%	-4.3%	-3.1%	1.6%	-2.8%
Oil exports (% of GDP)	1%	9.5%	10%	10%	12%	14%	15%	14%	18%	7.3%	7.2%
Total oil export	689%	1,350,757	1,376,666	1,510,857	2,047,705	3,100.5	4,187.4	5,087.2	8,418.5	11,094.1	7,131.20
Total non-oil export	1,164	455.9	322	438.3	4949.5	677.3	636.9	569.4	460.7	576.4	702.5
Total exports	1,853	1806.7	1698.7	1949.1	2542.2	3,777.8	4,824.3	5,656.6	8,879.2	11,670.5	7,833.70
Total imports	1256.2	1553	1457	2179.22	2536.1	3586.18	5,946.0	7,104.0	7,722.4	8,229.4	8,528.0
Trade deficit	-476.1	254	90	-230.11	6.07	191.57	-1121.7	-1,448.1	1,156.8	3,441.1	-694.3
Balance of payment deficit	111.5	81.5	-90.04	198.72	422.6	730.2	530.5	-208.6	-282	21.1	-502.2
% oil exports	37%	74.8%	81%	77.5%	80.6%	82.1%	87%			95.1%	91.0%
% non-oil export	63%	25.2%	19%	22.5%	19.4%	17.9%	13%			4.9%	9.0%
Total revenue	109015	334.0	366.3	474.9	715.0	1029.0	1218.4	15075	18,462.4	24,707.9	20,045.6
Total oil revenues	15.7	143.8	149.7	200.6	399.0	502.9	608.6	7557	10,047.6	15,996.7	9,596.2
Total non-oil revenues	108999.3	190.2	216.6	274.3	316.0	526.1	609.8	7518	8414.8	8,711.20	10,449.4

Share of oil in total revenues (%)	0.01%	43%	41%	42.3%	40%	49%	50%	50%	54.4%	64.7%	47.9%
Share of non-oil in total revenues (%)	99.09	57%	59%	57.7%	60%	51%	50%	50%	45.6%	35.3%	52.1%
Oil share in GDP (%)	1%	6.8%	7.9%	9.1%	9.6%	14.6%	15.1%	15.1%	20.1%	18.2%	
Oil revenues share GDP (%)		4.6%	4.3%	5.1%	8.8%	9.5%	9.9%				
Current spending% in total spending		85%	81.8%	73%	74.9%	71.9%	78.5%	80.61%	82.99%	87.45%	85.29%
Development spending (%) in total spending		15%	18.2%	27%	25.1%	28.1%	21.5%	19.39%	17.01%	12.55%	14.71%
Current spending% in GDP		9.70%	9.90%	10.60%	12.00%	15.10%	18.10%				
Development spending (%) in GDP		1.7%	2.2%	2.6%	4%	5.8%	4.5%	6.4%	7.2%	7.4%	
Total spending % in GDP		11.4%	12.1%	13.2%	16%	20.9%	22.6%				
Net FDI		392	574	713.2	1349.2	1511.1	2304	35341	24256		

Sources: Adapted from the Central Bank of Sudan and Ministry of Finance and National Economy Annual Reports (Various Issues)

Moreover, the positive impact of oil on government financial resources is observed from the increasing share of the Sudanese government in oil revenues from partnerships with foreign oil producing companies in Sudan. For instance, the rise in oil production has led to a rapid continuous increase in the share of the Sudanese government in total oil production and revenues from 23% in 2000 to 75% in 2005. The share declined to 56.7% in 2009 however due to the decline in oil prices associated with the global economic crisis of 2009.

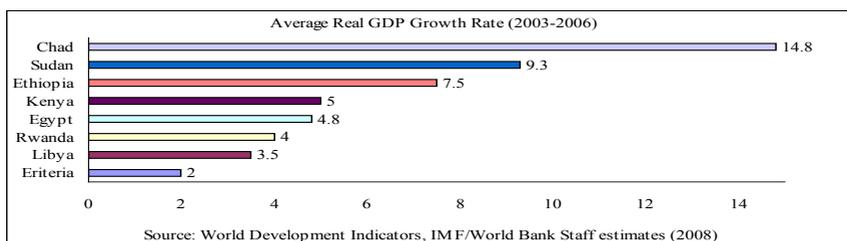
Furthermore, oil has created a positive impact on foreign trade as perceived from the volume and structure of exports, balance of trade. We find that oil has a positive impact on the balance of trade for the first time since 2001. But this surplus in the balance of payments could not be sustained, and immediately turned into a deficit, most probably due to the increase in imports of capital goods. As table 5 shows, oil exports represented about 95% of total exports, it led to a positive impact in the balance of trade over the period 2000-2009 as the chronic deficit in the balance of trade turned into surplus in 2000, 2003, 2004, 2007 and 2008. While total exports grew dramatically from 7% of GDP in 1996 to 14% in 2006, imports remained higher at 16% of GDP and led to a trade deficit averaging 2% of GDP since 1999.

The oil export boom raised the value of total exports from US\$620 million in 1996 to US\$4,522 million (1996 prices) in 2006, representing a more than 700% increase over the decade. The large import demand of the country, the huge transport costs and other expenses related to oil operation, and the weak performance of the non-oil exports contributed to the current account deficit. The size of the current account and balance of payments deficit during 1999–2006 were however smaller compared to pre-oil exportation levels¹¹.

Moreover, oil has led to a significant positive impact on gross domestic product (GDP) as perceived from the impact of oil in the structure of the Sudanese economy and macro-economic indicators as measured by the share of oil in GDP, its growth rate and its composition. For instance, we observe the increasing impact of oil as measured by the rapid and continuous increase in the contribution of the oil sector in GDP from 1% in 1999 to 10% in 2004. Moreover, oil has led to positive impact in real GDP growth, for instance, the average rate of growth of GDP increased from 6.2% to 6.8%, 8%, 10%, 9% and 9.6% over the periods 1997-1999; 2000-2009; 2005; 2006; 2005-2007 and 2006-2008 respectively, putting Sudan among the fastest growing economies in the region. Figure 6 below shows that Sudan is a top growth performer in the

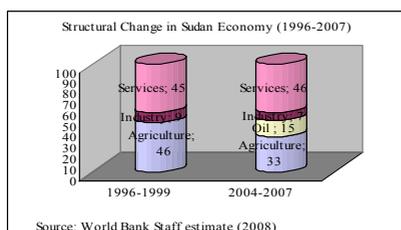
region, with oil playing a pivotal role. Moreover, oil has led to structural change in the composition of GDP, as the dividends from oil exportation have caused major transformations and structural changes in the economy. The structure of the Sudanese economy has shifted over time from being predominantly reliant on agriculture for growth and exports to its current reliance on the oil sector (see Figure 7-8 below).

Figure 6 - Average Real GDP Growth Rate compared to other African countries (2003-2006)



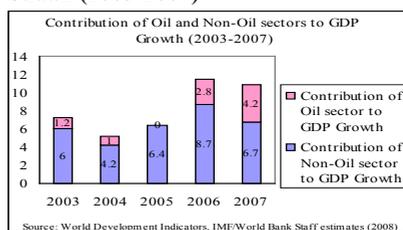
Source: The World Development Indicators (WDI)/ IMF/World Bank Staff Estimate (2008)

Figure 7- Structural Change in Sudan Economy (1996-2007)



Source: The World Development Indicators (WDI)/ IMF/World Bank Staff Estimate (2008)

Figure 8 – Contribution of Oil and Non-Oil Sectors to GDP Growth in Sudan (2003-2007)



Unlike other typical oil economies, in Sudan the impact of oil on non-oil sectors (agriculture, industry and services) remained very limited. This is noticeable from the composition or the sectoral share in GDP. Due to the increasing share of oil in GDP, the contribution of the industrial sectors (including oil, quarrying and mining, manufacturing, electricity and water and construction) in GDP increased to 32.3% in 2008 compared to 21.7% over the period 1999-2004, while the contribution of both agricultural and service sectors declined, which clearly

indicate the limited impact of oil in the agricultural and service sectors over the short run, but over the long run these sectors may benefit from the impact of oil sector development. Currently, the impact of oil is limited to only three branches of the services sector. For example, the oil sector has led recent growth, both in terms of direct value-added to the economy as well as the associated investment boom and boost to services such as transport and construction. The emergence of the oil sector adds directly to GDP and has induced growth in certain service sectors. The construction sector has grown by about 10% per annum since 1999 and has been the fastest growing sector in recent years, even surpassing the growth in the oil industry. Trade, restaurants and hotels have also flourished, mainly in the country's capital, and generated about one fifth of non-oil domestic product during 1996-2006.

Furthermore, the positive impact of oil in the government's public budget is perceived from the contribution of oil revenues in public finances and the budget as it leads to a significant increase in government revenues and spending over the period 1999-2009. For instance, we observe the large and increasing share of oil revenues in total revenues that grew from 43% in 2000 to 50% and 66% in 2006 and 2008 respectively. Despite continuous government efforts to increase the share of non-oil revenues in total revenues, the share of oil revenues in total revenues remains significant at about 50% over the period 1999-2004, but this share declined significantly to 34% in 2009, most probably due to the impact of the global economic crisis. Therefore, this implies the urgent need to avoid the heavy dependence on oil revenues. On the other hand the impact of oil on government expenditure is obvious from the increasing share of oil in public spending. Moreover, development spending also increased as its share in public expenditures increased from 21% over the period 1996-1999 to 24% over the period 2000-2004. But despite the increase in development expenditure from public expenditure from 9% in 1999 to 31% in 2004, its share declined and flattened out to 24% within total public spending over the period 2006-2009¹².

The implementation of economic reform policies, liberalisation and privatisation in the late 1990s, together with the exploitation of oil in 1999, and the Investment Encouragement Act of 2003, all encouraged high and increasing inflow of FDI to Sudan (see Table 4 above). In particular, the exploitation of oil in 1999 encouraged the inflow of FDI. For instance, according to the Arab Human Development Report (2003) the estimated net FDI flow to Sudan increased from US\$ 392 million in 2000 to US\$ 574 million in 2001¹³. In addition, we find

that the volume of investment increased over the period 1996-2004 from US\$ 251.3 to US\$ 1381 million, which implies that the rate of growth is near to about 500%¹⁴. Moreover, in 2006, the levels of FDI in Sudan were among Africa's highest with over US\$3.5 billion. From annual averages of US\$100–200 million prior to 2000, in 2006 net FDI and portfolio inflows were US\$3.5 billion, though tailing off to US\$3 billion in 2007^{15,16}. For 2009 however, FDI inflow decreased due to the global shock resulting in lower global oil prices, stagnating domestic oil production and related reduction in government spending. Due to increasing investment in oil, the sectoral distribution implies that the large share of FDI was concentrated on the energy and mining sector (74.7%, 73%), followed by industry (9.1%, 10%), agriculture (8.6%, 2%) and services sector (7.6%, 15%)¹⁷. This implies that oil enables Sudan to emerge as one of the highest recipients of FDI in the African and Arab regions.

Moreover, concerning the impact of oil in enhancing capacity building, we are aware of the fact that it may be useful to depart from the analysis of general standardised approach of examining only the macro-economic impact of oil, and to use a more in-depth analysis to examine the effect of production and export of oil (natural resource-based exports) on capacity-building including education, training, science and technology(S&T) and research and development(R&D) infrastructure and the growth and development trajectory of the Sudanese economy. But our attempt to briefly examine the impact of oil on capacity building is constrained by the lack of reliable data at the macro and micro levels and also by the fact that Sudan is a relatively new exporter. We find that most probably the impact of oil in capacity building including education, training, S&T and R&D infrastructure might still be very limited as the country is a relatively new exporter since 1999. Furthermore, the impact on oil in the development expenditures implies that it is not at all clear and is somewhat problematic to distinguish the share and growth of spending on education, training and R&D that were mainly attributed to production and export of oil. It is clear that at the macro level the share of spending on education and R&D as a percentage of GDP most probably remained almost the same without reporting a significant change in the pre and post oil periods¹⁸. Therefore, our findings in this section prove the first part of our hypothesis that oil created a positive impact on the Sudanese economy.

3.3.2 Oil and the challenges of development in the Sudan

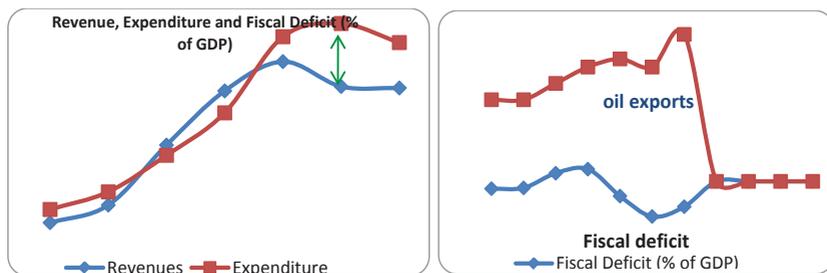
After explaining the positive impact of oil and the opportunities for development it is useful to elucidate also the negative impact of oil and the challenges for development in Sudan. These include the high uncertainty, volatility and risk of dependence on fluctuating oil prices in the international market, unsustainable oil revenues; the lack of diversification; Dutch Disease and potential future of Sudan-Southern Sudan relationships.

The first challenge related with oil is that the real economic activity is currently high, but the lack of economic diversification raises concerns over longer term sources of growth and sustained development, therefore diversification towards non-oil exports is imperative for long-run sustainable development strategies. Sudan has experienced a revival in its exports, but this is largely due to the export of oil. Since 1999 the exploitation of oil resources has led to large increases in national wealth, but it has also complicated macro-economic management with recent pressures toward internal and external imbalances, as well as a heightened concern for balanced growth in the non-oil sectors, which are important for sustainable growth in Sudan. On the external side, the current account has deteriorated since the oil boom and the real exchange rate has appreciated significantly. Therefore, the major challenge created by oil is the need for diversification, although oil has driven the recent surge in real economic growth. To sustain growth and provide broader income opportunities, Sudan will need to pursue a strategy of diversifying its sources of growth, including enhancing its non-oil exports (e.g. traditional agricultural exports that have provided export earnings over the past half century)¹⁹.

Another challenge is that oil earnings enter the economy predominantly through public finance channels, yielding significant volatility for fiscal policy. The expansion in public sector expenditures has crowded out private credit and stressed the financial sector. Oil export earnings now support the majority of public finance (55% in 2007) and expose fiscal policy to the volatilities of domestic production and international price fluctuations. Significant oil revenue volatility and shortfalls were observed in late 2006 and early 2007 resulting in the highest fiscal deficits since the macro stabilization of the early 1990s - which accounted for 4.3% and 3.1% of GDP in 2006 and 2007 respectively (see Figures 10-11 below). The volatility in revenue has greatly complicated public expenditure management²⁰. Moreover, there is a considerable decline in revenue from 24,707.9 million Sudanese pounds in 2008 to 20,045.6 million Sudanese

pounds in 2009, at a rate of 18.9%, attributed to the great decline in the share of oil in total revenues that declined by about 40.0%²¹.

Figure 9-10 – Sudan’s Fiscal Position and Oil Earnings (% of GDP)



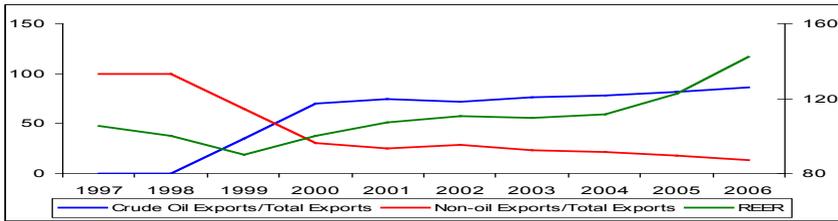
Source: The World Development Indicators (WDI)/ IMF/World Bank Staff Estimate (2008): Figure 1-3, p.5.

One important challenge created by oil is its weak effect in improving social development indicators. For instance, despite the increase in development expenditure from public expenditure, rising from 9% in 1999 to 31% in 2004, its share then declined and flattened out at 24% from the total public spending over the period 2006-2009. The share of development spending from oil revenues declined from 58% in 2006 to 34% in 2008, while the share of current spending from oil revenues increased from 42% in 2006 to 66% in 2008²². This clearly indicates the bias and deficiency in the use of oil resources on current spending instead of development spending. Despite the high oil revenues and impressive real growth, so far they are not fully utilised and do not prioritise improvement of social development indicators. Consequently, emerging vulnerabilities can be seen from poverty, regional inequalities and a low ranking in the Human Development Index²³.

Another challenge related to oil is the potential for Dutch Disease. For instance, the exploitation of oil resources has led the increase in national wealth, but domestic absorption of these large inflows significantly complicates macro-economic management²⁴. There is increasing debate on the potential incidence of the Dutch Disease in Sudan’s economy. On the one hand, the views in support of the potential incidence of the Dutch Disease are based on the argument that the appreciation of the nominal effective exchange rate and the sustained increases in the general price levels led to the appreciation of real effective exchange rate in the recent years. This argument indicates that the inflows through higher levels of

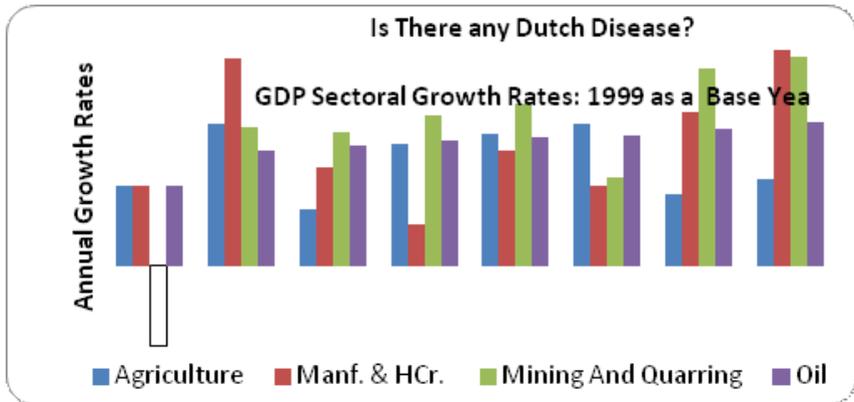
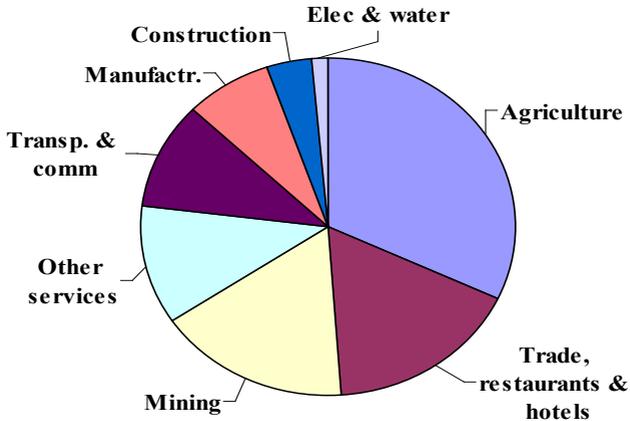
government spending put additional pressures on the prices of non-traded goods. Prices of housing, water and electricity grew almost twice as fast as the prices of tradable goods, specifically food, clothing and consumer goods. The real effective exchange rate appreciated by 40% in 2005–2006, which added to the more fundamental structural rigidities and supply-side constraints already faced by non-oil exporters. This argument indicates that some signs of Dutch Disease are present, though it is difficult to assess the extent of these characteristics, as the country is a relatively new exporter²⁵. On the other hand, the views in suspecting of the incidence of the Dutch disease are based on the argument that the agriculture and services sector continues to dominate the economy even after the increasing share of oil in GDP over the period 1990–2009. Moreover, the rise in the share of industry in GDP is mainly attributed to the rise of the share of oil in GDP, while the share of manufacturing in GDP over the period 1999–2006 remained stagnant and the growth rate of manufacturing remained between 1% and 3%. This argument implies that it may be too early to confirm any Dutch Disease in the Sudanese economy²⁶.

Figure 11 – Share of oil exports and non-oil exports in total exports and real effective exchange rate in Sudan (1997–2006)



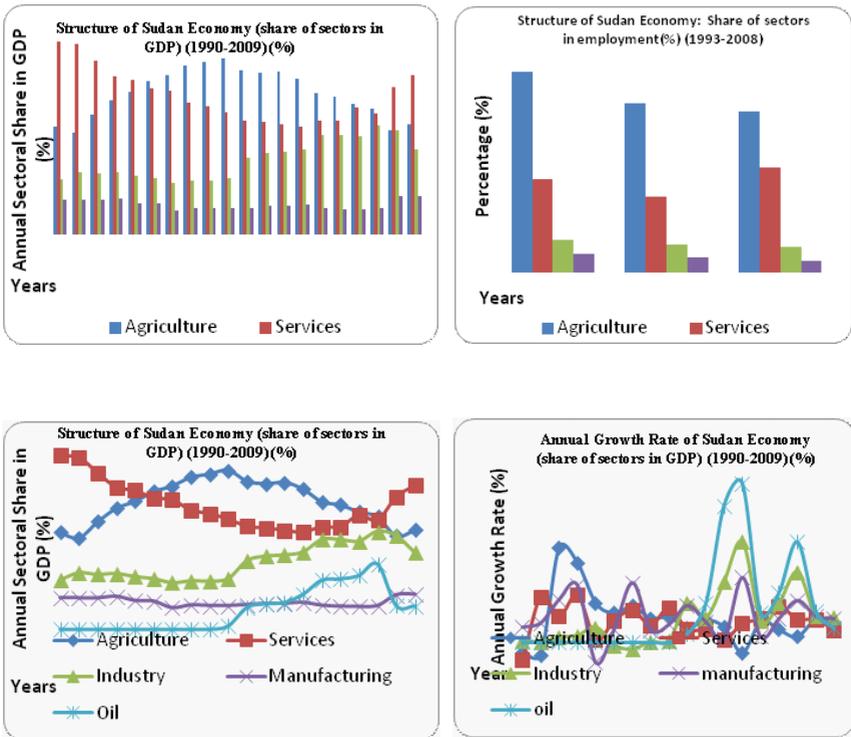
Source: Elbadaw and Kaltani (2007)

Figure 12-13: Sectoral Composition of GDP and GDP Growth rate



Source: Bedawi (2007)

Figures 14–15- Structure of Sudan Economy: Share of sectors in GDP, share of sectors in employment and annual sectoral growth rate (share of sectors in GDP) (1990-2009) (%)



Sources: Adapted from the Central Bank of Sudan and Ministry of Finance and National Economy Annual Reports (Various Issues)

A further challenge related to the dependence on oil is the uncertainty in economic growth as measured by long run GDP and GDP per capita growth rates. This implies that Sudan must implement a strategy to avoid the negative consequences of declining growth rates in GDP and GDP per capita and uncertainty related to a drop in oil reserves by using its oil production. According to UNDP (2010), prior to the global financial crisis, the Sudanese economy had been one of the fastest growing in the world, despite US sanctions. However, the global financial crisis and related shocks in 2008 and 2009 resulted in low global oil prices, stagnating domestic oil production and caused a reduction in the GDP growth rate, dropping from 10.5% in 2007 to 7.8% and 5% in 2008 and 2009 respectively (see Table 1 and Figures 1-4 above)²⁷.

Another oil-related challenge is that oil revenues create other internal problems by increasing internal tensions or conflict related to the desire to maintain control over oil resources and failure to achieve an equitable distribution of oil revenues²⁸. The Comprehensive Peace Agreement (2005) states that oil revenues should be shared 50:50²⁹. From a political perspective in the short run with the official secession of the Southern Sudan, there is increasing tension and potential conflict between Sudan and Southern Sudan that threatens stability and sustainability. This increasing tension is attributed to the fact that the two sides have not reached an agreement on the division of oil revenues after secession. According to official estimates since 70% of Sudan's crude is pumped in Southern Sudan and since the main oil pipeline, refinery and seaport are located in Northern Sudan, this suggests that the Sudanese economy will be affected negatively and lose most of the oil reserves (70%) and oil revenues (50%) and Southern Sudan will remain dependent on the main pipeline passing through the north. Even after Southern Sudan's independence, Sudan will remain the former's only export route through a pipeline ending in the seaport in Port Sudan at the Red Sea. This also implies that the Sudanese government needs to invest in agriculture and non-oil industries, and that both the Sudanese and Southern Sudan governments need to take measures to counter the negative impact and ensure their mutual benefit. This demonstrates how oil remains a controversial issue in the Sudan-Southern Sudan conflict, and also creates more potential for future conflict between Sudan and Southern Sudan.

Oil has also affected the labour market because the exploration and production of oil leads to the creation of more employment opportunities, although this is difficult to elaborate due to a lack of accurate data. The inflow of FDI and the increased wealth from oil has encouraged migration to Sudan, so migrant workers have increased in the labour market, particularly in the private sector, which may also contribute to the growing unemployment rate. Furthermore, oil also affected the structure of wages and has led to a wage differential in Sudan; for instance, the results of the comprehensive industrial survey (2005) indicates that the highest salary for workers in the industrial sector is reported in the petroleum refining industry which is 18 times more than the average wage in the industry³⁰. Our findings in this section therefore prove the second part of our hypothesis: that oil has had a negative impact on the Sudanese economy.

4. Conclusions

This paper has discussed the impact of oil, and the opportunities and challenges for enhancing economic development in Sudan. We started by explaining the general socio-economic characteristics of Sudan's economy. We then provided a historical background about the structure of oil investment in Sudan, looking in particular at China's role therein, and explained how oil has created various positive effects and opportunities for development in Sudan. These include the impact of oil in satisfying domestic demand and achievement of self-sufficiency, increasing government resources, revenues and spending, economic growth (GDP growth and composition), foreign trade (volume and structure of exports), balance of trade, balance of payment, foreign direct investment and social development in Sudan.

We then illustrated the negative impact of oil and the challenges of development in Sudan. These include the volatility and risk of dependence on highly fluctuating oil prices in the international market; unsustainable oil revenues; the lack of diversification; Dutch Disease and the challenges of potential future Sudan-Southern Sudan conflict. Therefore the major policy implication from our findings is that the fulfilment of long-run sustainable growth and development strategies in Sudan requires various sources of growth, including revitalising and enhancing non-oil exports, notably traditional agricultural exports.

Notes:

1. The Dutch Disease is a process in which the discovery of natural resources causes a country to experience a 'change in the group of reference' from one that aim at generating a trade surplus in manufacturing to one that able to generate a trade surplus in primary commodities. The country experiencing this disease also shows differences between employments in manufacturing. The process of de-industrialisation due to the discovery of natural resources, mainly natural gas apparent from the case of Holland". (cf. Palma, 2003: 21)
2. The World Bank and United Nations Development Programme (UNDP) Human Development Report classify world countries differently according to income level. We use the World Bank classification of economies that puts Sudan in the lower middle-income category or group.
3. Sudan oil output is estimated at 500,000 barrels per day (2007) and oil reserves at 5 billion barrels (2005) – see WB-DTIS, (2008), p.2. Moreover in 2005, the Sudanese Energy Ministry estimates total oil reserves at 5 billion barrels.
4. Sudan National Petroleum Corporation (Sudapet) develops joint ventures

with foreign companies in downstream projects. However, due to its limited technical and financial resources, the company takes a minor role in large upstream development projects.

5. See Sudan Ministry of Investment unpublished statistics and data from the feasibility studies (2009).
6. According to Ministry of Energy and Mining (2008) among the Asian countries China contributes by significant share in investment and concessions in oil sector that includes many Chinese companies involved in many blocks over the period (1999-2008). For example, we observe significant share of China (China National Petroleum Company (CNPC) (40%); CNPC (41%); Sinopec (6%); CNPC (95%); Petroenergy (40%) and Petroenergy (35%) of total concession in the Greater Nile Petroleum Operating Company (GNPOC); Petrodar Petroleum Operating Company; Petrodar Petroleum Operating Company; China National Petroleum Company International Sudan (GNPCIS); Group of Companies and Red Sea Oil Company respectively. Moreover, Sudan Ministry of Energy and Mining unpublished report (2008), indicates that out of Asian countries total investment (84.4%) in Sudan the share of China (Chinese CNPC+SINOPEC companies) is large in total oil investment (47.3%), up-stream oil investment (43.8%) and down-stream oil investment (56.9%). In addition to the large share of China (47.6%: CNPC (45.2%) and SINOPEC (2.4%)) of total Sudanese and Asian countries investment in Sudanese oil pipe lines during (1999-2008), large share of China (CNPC: 50%) and partnership with Sudan government in investment in oil refinery and in petrochemicals (CNPC: 95%), refinery and petrochemicals (CNPC: 51%) and in marketing, industry and manufacturing of oil (Kandoc petrochemical: 12.5%) of total of Asian countries investment in oil sector in Sudan over the period (1999-2008).
7. See the Central Bank of Sudan 49th Annual Report (2009): Tables 9-5 and 9-6, pp. 133, 136.
8. See Sudan Ministry of Finance and National Economy (2008) Unpublished Report (2008), and Central Bank of Sudan 44th Annual Report (2004): Appendix No. XVI, pp. 188-189; and 48th Annual Report (2008): Appendix No. XVI-B-XVIIIB, pp.158-164.
9. Nour (2009) indicates that Chinese aid to Sudan is tied/ related to trade, FDI and importance of oil to Chinese economy and that the increase in the inflow of Chinese aid and development assistance in the form of loans has caused mixed positive and negative impact for Sudan economy over the period (1997-2007), by providing alternative complementary sources of finance to complement the shortage of domestic capital and financing development projects, but created a negative impact by increasing Sudan debts to China from 0.9% in 1999 to 13.45% in 2007. Despite the global

economic crisis China has reaffirmed its commitment to maintain further aid and development assistance to Sudan, to maintain economic interests of its access to oil in Sudan.

10. See Salih, (2004), p.166.
11. About 40% of oil shipped to China -see Salih, (2004), p. 94. Sudan's crude oil exports have increased sharply since the completion of a major oil-export pipeline in 1999. In 2004, oil imports were reported at 0 bbl/day. Sudanese domestic oil consumption is estimated to be averaged 82,000 bbl/d in 2005. This was a 15% increase over the 70,000 bbl/d consumed during 2004. Return from oil exports to Sudan is US\$ 500 million and US\$ 600 million in 2000 and 2001 respectively- See Salih, (2004), p. 91.
12. See Sudan Factsheet Human Rights and Oil workshop-January 31, 2003, p. 2.
13. See the World Investment Report (2002) UNCTAD. See also Arab Human Development Report (2003): Table 5.1 p.102.
14. Despite the huge export earnings from oil, the current account balance has been in deficit at eight percent of GDP on average during 1999-2005. This is partly induced by increased imports of manufactured, machinery and transport equipment's and other commodities. The impact of these expenses in the overall balance of payments is subdued by the influx of foreign direct investment (FDI). In 2004 and 2005, the influx of FDI led to overall surplus in the balance of payments.
15. See WB-DTIS, (2008), p. 4.
16. See the IMF First Review of Performance Under the 2007-08 Staff-Monitored Program, June 2008, p.6.
17. See Sudan Ministry of Finance and National Economy (2002) "the Sudan Economy in Figure," Ministry of Finance and National Economy, Macroeconomic Policies and Programme Directorate MEPPD, First Edition, (2002), p 27.
18. For instance, we find that the significant China investment in oil sector in Sudan has motivated China to increase very limited technical support for capacity building in Sudan, though the available information implies that direct allocation of Chinese aid to training and education sector is very limited.
19. See WB-DTIS, (2008), p. viii.
20. See WB-DTIS, (2008), pp. 4-6.
21. See the Central Bank of Sudan Annual Report (2009), p. 84.
22. See Sudan Ministry of Finance and National Economy (2002) "the Sudan Economy in Figure," Ministry of Finance and National Economy, Macroeconomic Policies and Programme Directorate MEPPD, First Edition, (2002), p 27.
23. See WB-DTIS, (2008), p.6.

24. Dutch Disease refers to the experience of the Netherlands in the 1960s, when the economic boom following natural gas discoveries led a decline in manufacturing and real exchange rate appreciation. In his summary of the literature, Corden defines it as a phenomenon where a boom in one export sector, typically a windfall discovery of a new natural resource, draws factors of production from other sectors of the economy and boosts demand for non-tradable relative to tradable, which in turn appreciates the real exchange rate. Traditional exports collapse, due both to the internal reallocation of resources and the real exchange rate appreciation. W.M. Corden, "Booming Sector and Dutch Disease Economics: Survey and Consolidation," Oxford Economic Papers 36 (November 1984): 360–62.
25. See WB-DTIS, (2008) p. 3. See also Elbadawi and Kaltani (2007).
26. See Bedawi, W. F. (2007).
27. A recent IMF report ranked Sudan as one of the most vulnerable low-income countries in the global financial crisis due to its high vulnerability to trade, aid and remittances shocks- see <http://www.imf.org/external/pubs/ft/books/2009/globalfin/globalfin.pdf>.
28. For instance, in the past the exploration and production of Sudan's oil have been highly controversial issue and is affected by the continuous conflict which involves the war and conflict over controlling oil resources. "Oil has always an issue in the Sudanese conflict. For instance, the organized non-government political activity resisting oil extraction: On 30 August 1999, Sudan's pipeline with a capacity for 100,000 barrels/day filled the first tanker at the supertanker port on the Red Sea. Not one month later, on 20 September, anti-government forces exploded a portion of the pipeline outside the town of Atbara. Moreover, due to conflict, oil exploration has been mostly limited to the central and south-central regions of the country". (See Sudan Factsheet Human Rights and Oil workshop–January 31, 2003, pp. 1-2 see also Sudan Fact oil fact sheet, 2006, pp. 1-2)
29. See for instance, Oil fact sheet on Sudan, September 2006 Produced by C. Pinaud for UnderstandingSudan.org, 2006, p. 2.
30. See the Executive Summary of the Sudan Comprehensive Industrial Survey, (2005), p. 29.

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