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**Assessment of Effectiveness of China Aid in Financing Development in Sudan
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Assessment of Effectiveness of China Aid in Financing Development in Sudan

By Dr. Samai Satti Osman Mohamed Nour¹

(January 2011)

Abstract

This paper fills the gap in the Sudanese literature and discusses the effectiveness of Chinese aid for financing development in Sudan using new primary data at the micro level. We find that the share of China in total loans and grants offered to Sudan greatly increased from 17% in 1999 to 73% in 2007 out of total loans and grants offered to Sudan. We find that Chinese aid and loans to Sudan caused mixed positive-negative impacts. The positive impact is providing alternative complementary sources of finance to complement domestic capital and financing development projects. The negative impact is increasing Sudan debts to China from 0.9% in 1999 to 13.45% in 2007 out of Sudan total debts. We find that the effectiveness of Chinese aid to Sudan is undermined by offering aid tied to trade, FDI and importance of oil to Chinese economy. We explain that despite the recent global economic crisis China has maintained offering tied aid to maintain its access to oil in Sudan. We find that despite a long period of economic sanctions, Sudan was able to grow thanks to the robust and increasing intensification of special economic relations with China which relaxed the development finance constraint. From the perspective of the new approaches to financing development our findings imply that even when a country is facing binding political and economic sanctions, it can still be able to finance a high growth strategy if it is endowed with natural resources and a partner that is in need for such resources.

Keywords: Financing Development, aid effectiveness, China, Sudan.

JEL classification: F30, F34, F35, O10

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1. Introduction

Following the declaration of the United Nations Millennium Development Goals (MDGs) in September 2000, there is increasing interest in the international community to enhance the old and new means for financing for development. For instance, both the United Nations International Conference on Financing for Development (Monterrey, Mexico, 2002) and the follow-up International Conference to "review the implementation of the Monterrey Consensus" (Doha, Qatar, 2008) confirm the main concern of the international community to issues of financing for development. In particular, the Doha Declaration on Financing for Development reaffirmed that "mobilizing financial resources for development and the effective use of all these resources are central" to the achievement of internationally agreed development goals, including the MDGs. It confirms the importance of both domestic resources and development strategies and also foreign resources flows, both private and public, in financing development in developing countries. In the context of national development strategies aiming at effecting development the most important topics regarding sources for financing development in developing countries include for example, Mobilization of Domestic Resources, Foreign Direct Investment (FDI), and other private flows, Financial Markets, Official Development Assistance and External Debts. The importance of financing development is also confirmed with the new challenges including the effect of the 2008 international financial crisis on the development finance sources, the additional costs imposed by the increasing concerns about climate change, the increased volatility in the prices of primary commodities, the additional resource needs of countries emerging out of conflict, and the increasingly recognized special needs of middle-income countries.

In the Arab region, the Arab leaders in the Kuwait Declaration (2009) confirm a high priority accorded to development finance issues. Financing development in the Arab countries depend on foreign direct investment, official development assistance and aid. Notably, Sudan's economy has relied heavily on a large influx of foreign aid.

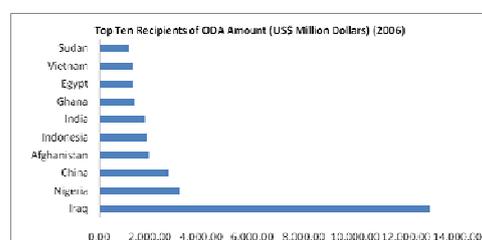
This paper is motivated by the recent debate in the international literature on recent increasing challenges confronting financing development and also by the observation that the extremely rapid and sustained expansion of the giant economy of China has been associated with a robust and increasing intensification of its economic relations with Sudan, and that these relationships are in turn imply both opportunities and challenges for financing development in Sudan. In particular, despite a long period of economic sanctions, but Sudan was able to grow thanks to special economic relations with China which relaxed the development finance constraint in Sudan.

Starting with the general overview of Sudan economy, one stylised fact on Sudan economy is that since long Sudan has been among the least developed, poor, low income and

highly indebted countries according to World Bank classification. The implementation of economic reform policies in the late 1990s and the exportation of oil since 1999 together lead to significant improvements in most macroeconomic indicators and impressive real economic growth and rapid increase in per capita income. According to the World Bank (2008) Sudan is one of the newest significant oil producing countries in the World; Sudan is the third largest oil producers in Sub Saharan Africa (SSA) behind Nigeria and Angola. In recent years, the structure of Sudan economy has shifted over time, from predominantly reliant on agriculture for growth and exports, to its current reliance on the oil sector (WB, 2008), Sudan's real economic growth averaged about 9% during (2005-2006), putting Sudan among the fastest growing economies in Africa (WB, 2008). Consequently, following the improvement in the economic performance, Sudan turned from a low income economy into a lower medium income economy according to the World Bank classification.

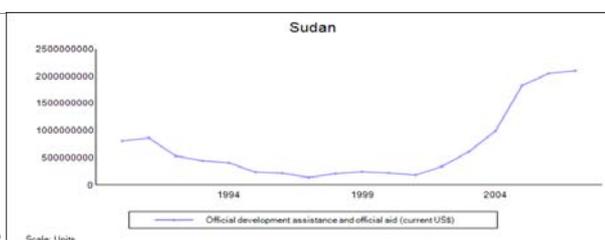
Despite the increasing dependence on the wealth from oil but like most other poor developing countries, Sudan has relied heavily on a large influx of foreign aid from different sources, Sudan is among the top ten recipients of gross Official Development Assistance (ODA) over the period (1990-2007)- see Figures 1-2 below. Since long, there is a significant amount of foreign aid to Sudan from different sources including U.S., EU (e.g. the Netherlands, Italy and Germany), Arab countries (e.g. Saudi Arabia, Kuwait and United Arab Emirates), China, the World Bank, International Monetary Fund, United Nations, Arab Fund for Economic and Social Development and Organization of Petroleum Exporting Countries. Since 1970s, China also started to offer aid and development assistance to Sudan. During the late 1970s and 1980s the large inflow of foreign aid to Sudan was mainly offered by the International Monetary Fund and the World Bank. Since the mid- 1990s, following the large drop in the inflow of foreign aid from the traditional western donors, Sudan looked for other alternative sources of foreign aid and development assistance from the emerging donors, mainly China. This policy is incidentally consistent with China's increasing economic interests in Sudan as a new resources - oil -rich economy. Consequently, in the last two decades, China has increased foreign aid and development assistance to Sudan and some other resources-rich developing countries. China aid to Sudan as in many other resource-rich developing countries is essentially motivated and intended to accomplish broader strategic objectives and achieve mutual interests. In Sudan, for example, China accounted for 58% of total contracted loans and grants over the period (2005-2007)- see Table 1 below.

Figure 1- Top Ten Recipients of Gross Official Assistance (ODA) (USD Million) (2006)



Source: Adapted from OECD, DAC 2006, www.oecd.org/dac

Figure 2- Official development assistance (ODA) and Development official aid offered to Sudan (1990-2007) (current in US\$)



Source: Adapted from the World Bank-World Development Indicators Database WDI (April 2009)

Based on the above the aims of this paper is two-folds first to examine the importance of Chinese aid, development assistance, loans and grants offered to support financing development in Sudan over the period (1997-2007). And second to assess the impacts and effectiveness of China aid, development assistance, loans and grants in financing development in Sudan over the period (1997-2007). This paper aims to examine two stylised facts: first the importance of Chinese aid, development assistance, loans and grants in financing development in Sudan (1997-2007), second the mixed positive-negative impacts of Chinese aid, loan and grant to Sudan (1997-2007) as China aid to Sudan is tied to trade, FDI and importance of oil to Chinese economy. For the case of Sudan, it is interesting to note that Sudan was under economic and political sanctions for a fairly long period, yet it was able to grow thanks to special economic relations with China which relaxed the development finance constraint.

Based on the above, the rest of this paper is organized in the following way: section 1 presents introduction, objectives and structure; section 2 gives background and context of the paper; section 3 provides the conceptual framework and literature review; section 4 shows research methodology; section 5 discusses the results; and finally section 6 provides the conclusion and policy recommendations.

2. Background and Context of the Research

Based on the above and before assessing the impacts of Chinese aid to Sudan it will be useful to explain the trend, distribution and composition of Chinese aid to Sudan.

We find that over the period (1999-2007) loans and grants were offered by several international institutions and donor countries including China. According to the Central Bank of Sudan annual reports (2003-2005) the share of China constituted 8.75%, 6.1%, and 75.9% out of the total loans contracted in 2003, 2004 and 2005 respectively. The significant investment of China in oil sector in Sudan motivated China to increase its involvement in financing development to Sudan economy over the period (1997-2009). For instance, we notice the significant and rising share of China in total loans and grants to Sudan from 33% to 45% and 58% during the periods (2002-2007), (2004-2007) and (2005-2007) respectively. Notably, the share of China in total foreign loans and grants offered to Sudan shows a declining trend over the period (1999-2004) from 17% in 1999 to 7%, 8% and 7% in 2002, 2003 and 2004 respectively, but it is rapidly increased to 76% in 2005, it is declined to 24% in 2006 but it is increased to 73% in 2007 and it is declined to 3.35% in 2008 and increased to 27.44% in 2009- see Table 1 below. One possible interpretation of this changing trend is that the rapid increase in the share of China in total foreign loans and grants to Sudan in 2005 and 2007 is probably attributed to China's consistent policy to increase international involvement by increasing aid, investment and trade with developing countries such as Sudan. Another explanation is that the implementation of peace agreement accord in 2005 probably encouraged China to offer more loans and grants to

Sudan. Another justification is the increase of China involvement in oil sector in Sudan, China is the largest foreign investor in Sudan's oil sector accounts for 48% of total investment in Sudan oil sector, it is Sudan's main trade partner, as 86% of total Sudan oil export is exported to China and this accounts for 10% of China oil imports, this implies that Sudan is major oil supplier to China. On the other hand, the declining trend in 2006 is probably due to the policy of China government to reduce loans and grants to developing countries such as Sudan. The great decline over the period (2007-2009) is probably related to the global economic and financial crisis that leads to drop in the inflow of foreign resources from foreign donors. We find that despite the global financial and economic crisis but China has reaffirmed its commitment to fulfill earlier commitments and to maintain further loans, aid and development assistance to Sudan, China is expected to continue commitment to a win-win policy and is likely to continue offering tied aid to Sudan to maintain strategic economic opportunities and interests of its engagement in Sudan and its access to oil.

Table 1- The Distribution, Trend and Share of China in total loans and grants offered to Sudan (1999-2009) (US\$ Millions)

	1999	2002	2003	2004	2005	2006	2007	2008	2009
Total loans									
Grand total loans	76104	691,17	114,35	243,2	1072,5	589,5	1491113704	436.8	507.60
China total loans	12000	50,7	10	14,8	814	155,2	1104921672	22.20	202.24
Share of China in total loans (%)	16%	7%	9%	6%	76%	26%	74%	5.08%	39.84%
Total grants									
Grand total grants	1200	9,83	17,42	6,72	3,3	138,2	15635358,55	225,48	229,5
China total grants	1200	0%	0%	3,6	1,2	19,5	0%	0%	0%
Share of China in total grants (%)	100%	0%	0%	54%	36%	14%	0%	0%	0%
Total loans and grants									
Grand total loans and grants	77304	701	131,77	249,92	1075,8	727,6	1506749063	662.28	737.10
China total loans and grants	13200	50,7	10	18,4	815,2	174,7	1104921672	22.20	202.24
Share of China in total loans and grants (%)	17%	7%	8%	7%	76%	24%	73%	3.35%	27.44%
Share of China in total loans and grants (1999-2009) (%)	24%	33%	38%	45%	58%	49%	73%	38%	35%

Sources: Adapted from the Central Bank of Sudan Annual Reports (1999-2009), 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).

The robust and increasing intensification of China and Sudan economic relations appears from the trend and distribution of the large Chinese total financial aid, loans and grants that amounted to US\$ 2488.6 million over the period (1970-2008). For instance, we observe the rapid increasing trend of China financial aid, loans and grants to Sudan from US\$ 22.5 million to US\$ 66.8 million and finally US\$ 2399.3 million over the periods (1970-1979), (1980-1989) and (1990-2008) respectively. Moreover, of total financial aid, loans and grants that amounted to US\$2488.6 million the distribution is 1%, 3% and 96% for the periods (1970-1979), (1980-1989) and (1990-2008) respectively. This implies a rapid increasing trend of China financial aid, loans and grants to Sudan over the past 18 years, since the incidence of majority of financial aid, loans and grants to Sudan occurred over the period (1990-2008)- see Table 2 below. The composition of China total aid, loans and grants to Sudan over the period (1990-2008) implies that of total

Chinese aid, loans and grants the share of grants, technical and commodity aid, loans without interest rates, preferential loans and commercial loans are as follows 2%, 3%, 5%, 3% and 87% respectively. This composition indicates that the commercial loans (87%) represent the majority of total Chinese funds offered to Sudan in the forms of aid, loans and grants over the period (1990-2008). These findings probably indicate that the composition of China- Sudan economic relations is by nature motivated by or based on mutual economic and commercial benefits and interests- see Table 3 below. For instance, until the end of 2008, China government offered Sudan commercial loans of total value equivalent to US\$ 1649.1 million for financing implementation of several strategic projects such as petroleum, electricity, and irrigation. Chinese policy implies that China government offers Sudan government commercial loans upon satisfaction of specific conditionality requirements. First, the projects should be implemented by the Chinese companies; second, the repayment period of the loans lasts for 4-10 years, determined according to the cost of finance that prevalent in the market, with the grace period last between one to five years, third the payment of insurance or guarantee fees that may reach 5% from the value of the loan, fourth, payment of advancement money that equal between 10%-15% of the total loan value, and finally, for obtaining these loans Sudan government pay insurance or give guarantees from the Central Bank of Sudan and petroleum guarantees. We find that the sectoral distribution implies that over the period (1997-2008) China aid, development assistance, loans and grants are biased towards specific sectors, notably, electricity (43%), water and irrigation (26%), Merowe dam (15%), Khartoum refinery (9%), agriculture (3%), others sectors (3%) and roads and bridges (1%)- see Table 4 below. Direct allocation of Chinese aid to training and education sector is very limited, for instance, in addition to direct internal and external training to improve capacity building in Merowe dam, Chinese company "Harbin-Jilin" offered a grant equivalent to US\$ 10 million to support Merowe technological faculty in June 2008. Moreover, China offers Sudan with four different kinds of technical assistance in the form of scholarship. For instance, the numbers of Chinese scholarships offered to post graduate Sudanese students to study in China are 42 and 76 in (1999-2004) and (1999-2009) respectively. The distribution of these scholarships implies that over the period (1999-2004) the majority was offered for Ph.D. degree students (81%) and few was offered for M.Sc. degree students (19%). Notably, the majority (93%) was offered for specialization fields of Engineering (40%), Science and related fields (53%) and finally few was offered for fields of specialization in Arts, Social Science and related fields (7%)- see Table 5 below.²

Table 2- China Government Total Financial Aid, Loans and Grants to Sudan Government (1970-2008 in million US\$)

Period (1970-2008)	China Total Financial Aid, Loans and Grants	Distribution of the share in total (%)
1970-1979	22.5	1%
1980-1989	66.8	3%
1990-2008	2,399.3	96%
Total 1970-2008	2,488.6	100%

Source: Sudan Ministry of Finance and National Economy (2008) - Unpublished Report (2008).

² See unpublished information from Sudan Ministry of Higher Education and Scientific Research (2009)

Table 3 – The Composition, Nature and Distribution of China total aid, loan and grant to Sudan (1990-2008)

Form and kinds of fund	Number	Value (US\$ millions)	Distribution and Share in total %
Grant	13 grants	US\$40.1 million	2%
Technical and commodity aid		US\$56.7 million	3%
Loans without interest rates		US\$89.4 million	5%
Preferential loans	3	US\$49.6 million	3%
Commercial loans		US\$1649.1 million	87%
Grand total			100.00%

Source: Sudan Ministry of Finance and National Economy, Sudan Ministry of National Cooperation-Unpublished Report (2008).

Table 4 – The Sectoral Distribution of China financial aid, loan and grant to Sudan (1997-2008)

Sector	Total (US\$ million)	Share (%)	Sector	Total (US\$ million)	Share (%)
Electricity	1473.7	43%	Electricity	1473.7	43%
Water and Irrigation	877.3	26%	Water and Irrigation	877.3	26%
Merowe Dam	520	15%	Merowe Dam and related projects	603.1	18%
Khartoum Refinery	319	9%	Khartoum Refinery	319	9%
Other Sectors	102	3%	Other Sectors	102	3%
Agriculture	88.6	3%	Agriculture	15.5	0,45%
Roads and Bridges	46.6	1%	Roads and Bridges	36.6	1%
Total	3427.2	100%	Total	3427.2	100%

Source: Sudan Ministry of Finance and National Economy, Sudan Ministry of National Cooperation-Unpublished Report (2008).

Table 5– Distribution and fields of specialization of Chinese postgraduate scholarships offered to Sudanese (1999-2009)

(a) Fields of specialization (1999-2004)	Total	Share (%)	(b) Degree (1999-2004)	Total	Share (%)
Engineering	17	40%	M.Sc.	8	19%
Science and related fields	22	53%	Ph.D.	34	81%
Engineering, science and related fields	39	93%	Total (1999-2004)	42	100%
Arts, social science and related fields	3	7%	Total (1999-2009)	76	
Total	42	100%			

Source: Sudan Ministry of Higher Education and Scientific Research³

We find that from the perspective of the new approaches to financing development the main criticisms of China aid policy are based on several stylised facts. First China aid policy towards Sudan includes little programme aid except for humanitarian aid and debt relief through China's contribution to international organizations. China aid policy towards Sudan includes cancellation of China's debts for Sudan, for instance, China exempted 62% of its loans without interest rates and some commercial loans on Sudan government until December 2000 and indicated exemption of 80% of Sudan's debt to China in 2007 protocol.⁴ This implies that China aid to Sudan mainly gives project aid although some of the aid is utilized for technical assistance and training and that China does not give assistance in the form of programme or budget support as prescribed in the Paris Declaration on Aid Effectiveness (Paris High-Level Forum, 2005). Second, China aid policy towards Sudan is based on giving aids with little political conditionality and without interference in allocation of aid this implies giving freedom to Sudan government to decide on allocation of China aid. Third China aid to Sudan has revealed preference for grandiose and prestigious projects and buildings (e.g. friendship hall and presidential palaces) that are perceived as unproductive investment that few traditional donors would be willing to finance. Fourth, the lack of well defined and organized systematic monitoring framework to monitor performance of China aid policy in addition to weak institutional arrangements that mainly based on governmental institutions in Sudan and China without involvement of NGOs.

³ Science and related fields include Science, Geophysics, Math, Physics, System, Geography, Chemistry, Botany, Genetic, Agriculture, Geochemistry, Animal Production, Geology and Public health. Arts, social science and related fields include, Chinese Language, Economics- African and Asian Studies.

⁴ See Sudan Ministry of Finance and National Economy, Sudan Ministry of National Cooperation-Unpublished Report (2008).

3. Conceptual Framework and Literature Review

Based on the above background on the importance of foreign aid to Sudan, this section first explains the conceptual framework and motives of foreign aid and then explains the literature on the impacts and effectiveness of foreign aid.

The concept Official Development Assistance (ODA) deals with the nature, and philosophy, of international financial and technical cooperation for development. The topic raises controversial issues pertaining to the commitment of donor countries to honor their obligations regarding agreed upon ODA/GDP percentages; the effectiveness, and quality, of ODA in promoting long-term growth; the appropriate restructuring of ODA conditionality to suit domestic conditions of recipient countries; the effectiveness of international, and regional, development finance institutions; and, south-south cooperation. According to the UNDP, the concept of foreign aid is often defined in relation to the concept of Official Development Assistance (ODA).⁵ The substantial inflow of foreign aid has occurred in the period following the end of the Second World War (WWII) (Ali et. al., 1999).

The motivation or rationale for donors to give foreign aid to different recipient countries can be interpreted from different developmental, economic (commercial) and political perspectives. The literature discusses many reasons or motives behind giving aid. The first conventional motive is altruistic motives for giving foreign aid, the definition of ODA implies that the donor's sole purpose to help improvement of economic development and welfare in the recipient country, but this definition does not prevent a mutual benefit for both aid donors and aid recipients.

The second conventional motive is that foreign aid is offered to enhance the economic relations, commercial interests and mutual benefits for both aid donors and recipients. This implies that the motive of donors in offering foreign aid is importantly tied to support and promote their own economic and commercial interests. For instance, since long, Western donors, the U.S., Arab aid donors and emerging active donors such as China have been pursuing tied aid and giving more aid to recipient countries to which these donors' countries export their goods. More recently, Western donors have reduced the promotion of their own economic interests in aid-giving through the reduction of the costly tying of aid to purchases from the donors' countries, for instance, the OECD-DAC has made a successful effort to eliminate tied aid to the

⁵ According to OECD (2004) definition the words "aid" and "assistance" refer to flows which qualify as Official Development Assistance or Official Aid, aid activities include projects and programmes, cash transfers, deliveries of goods, training courses, research projects, debt relief operations and contributions to non-governmental organizations. According to UNDP, the concept of foreign aid is often defined in relation to the concept of Official Development Assistance. According to UNDP (2007/2008) definition official development assistance, net disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions and by non-DAC countries to promote economic development and welfare in countries and territories in part I of the DAC list of aid recipients. It includes loans with a grant element of at least 25% (calculated at a discount rate of 10%). Official development assistance includes untied bilateral ODA for which the associated goods and services may be fully and freely procured in substantially all countries and that is given by one country to another. Official aid grants or loans that meet the same standards as for official development assistance except that recipient countries do not qualify as recipients of ODA. These countries are identified in

least developed countries, as 92% of DAC countries' aid was untied by 2005 and only the U.S. is now presumed to keep the bulk of its aid tied (OECD 2007).⁶ Neumayer (2003) indicates that the pattern of untying aid does not imply, however, that Western countries refrain from using ODA to support their own commercial interests.

The third conventional motive is the interference motive, i.e. the conditionality or meeting specific domestic policy requirements. For instance, since long Western donors have been developing aid policies that aim to influence the recipient country's domestic policies more or less separated from the actual main motive for giving aid. For example, the US usually demands democratic reform in the country receiving US aid at the same time that the aid may be used to promote US firms in the country, for example, through giving American grain as food aid. Different from U.S. and Western donors, both Arab donors and China are less interested in conditionality-interference motive as they perceive that recipient countries should be allowed to choose their own development path and not be hindered by interference policies from donor countries.

The fourth conventional motive is the political motive for giving aid with the purposes to reward or create allies on political issues and strategic considerations rather than the economic needs or policy performance of the recipients, such as the voting in the UN General Assembly. For instance, Alesina and Dollar (2000) indicate that France, Great Britain, Japan, the US and Germany allocate more aid to recipients that vote in tandem with them in the UN. In addition, Neumayer (2003) and Villanger (2007) indicate a similar pattern for Arab aid donors.

The fifth motive recently become more popular among Western OECD donor countries and World Bank implies focusing aid more towards the beneficiaries of poor to contribute towards achieving UN Millennium Development Goal (MDG) of halving the share of people living in poverty by 2015. Analysis of foreign aid offered by donors to poor countries implies that Western donors are more likely to increase offering aid to poor countries, they are increasingly and more directly concerned with aid to poverty than Arab donors (Neumayer, 2003; 2004; Villanger, 2007).

Apart from of the main motives of giving foreign aid, since long there is increasing interest and debate in the international literature on utilization, allocation and effectiveness of foreign aid in financing development and achieving their assigned economic growth objectives in the recipient developing countries. For instance, several studies in the literature find that foreign aid caused mixed positive and negative impacts. Notably, foreign aid has caused positive impact by offering huge external aid flows to developing countries to achieve two objectives: to reduce poverty and accelerate economic growth. For the majority of poor countries, foreign aid

part II of the DAC list of recipient countries, which includes more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union and certain advanced developing countries and territories.

⁶ The US has not report the share of tied aid since the OECD-DAC exerted pressure towards untying aid. However, the US has traditionally tied three-quarters of its aid.

represents a vital external source of finance that was often used to close the resources gap; supplement internal resources; complement low savings; enhance economic growth and to accelerate achievement of MDGs. However, foreign aid has caused negative impact by causing the debt problem and therefore, adversely affecting the public expenditure. The literature indicates the micro-macro paradox in effectiveness of foreign aid in developing countries. A well-known stylized fact is that donors often offered aid funds either through providing aid directly related to specific projects (project aid), or through providing support to the recipient government's budget (budget support, or project financing) while imposing conditionality on how to allocate the available resources. There is a large debate in the literature on the effectiveness and preference of either form of the two instruments of foreign aid, some studies show evidence in support of project aid and in opposition to budget support, whereas, other studies show evidence in support of budget support and in opposition to project aid.⁷

Few studies in the Sudanese literature focus on the impacts of foreign aid in Sudan. El-Sayed (1998) presents a historical overview of foreign aid and their impacts on Sudan's economy over the period (1958-1996) and finds that the inflow of foreign aid lead to mixed positive and negative impacts in Sudan during the period (1958-1996). As for the positive impact, the inflow of loans and grants from the other countries and international and regional funding institutions had effective contribution to partially complement the shortage of domestic capital to offer fund to cover the need for hard currencies that required for implementation of development projects. As for the negative impact the expansion in foreign aid and loans lead to increase in total debt obligations.⁸ Abulagasim (2007) discusses the Sudanese Chinese economic Cooperation and shows the positive impacts on development of electricity sector in Sudan, focusing on the case study of Garri Electricity Project. Based on the above and since the impact and effectiveness of Chinese aid and development assistance, notably Chinese project aid has not been adequately covered in the literature. Therefore, it is interesting and important to fill this gap in the literature and to discuss the effectiveness of Chinese aid and development assistance to Sudan, especially, at project level as we will explain in section 5 below.

4. Research Methodology

Based on the above, this section explains the methodology and data we use to assess the effectiveness, notably, the positive and negative impacts of Chinese aid, development assistance, loans and grants to Sudan over the period (1997-2007). As for assessment of the positive impacts we use the results of the interview questionnaire with the managers of the selected projects using the following indicators: increase or growth in production, increase in employment opportunities,

⁷ For detailed literature review on aid effectiveness, allocation, macro-micro paradox, positive and negative impacts see for instance, White (1992), Griffin (1970), Cassen et. al., (1986); Tarp (2000), Thorbecke, (2000), Robinson and Tarp (2000), Hansen and Tarp (2000); Mosley, (1980; 1986); Burnside and Dollar (1997); Mavrotas and McGillivray (2009).

⁸ See El-Sayed (1998).

increase in skill level and increase in knowledge and technology transfer for the key selected Chinese aid and development assistance projects implemented in Sudan over the period (1997-2007). As for assessment of the negative impact, we will use the increase in total debt to Sudan as a result of the Chinese loans to Sudan over the time period (1997-2007). We are aware of the fact that loans and debt are not the only negative impacts, and assessment should include adverse side effects of aid, notably, unemployment, environmental impacts, displacement of people, waste disposal, wages, incomes, poverty, in addition to other negative impacts as a result of the aid conditionality set between the two governments in the agreements signed which sometimes indicate the level to which China will be using its own inputs. In general, it is clear that China's development assistance is closely tied to state sponsored investment projects, while limited information is available to understand the various objectives of such assistance, or to assess its wider impacts, particularly its social and environmental impacts and contribution to poverty reduction. For instance, there is no adequate data to assess the little systematic evidence on the effectiveness of Chinese aid in reducing poverty or improving the distributional impacts of China's engagement and China's labour practices and implications on Chinese labour or the local workers. Moreover, in some cases such assistance is perceived as not having widespread social benefits (such as the presidential palace). In addition to potential negative impact probably related to the requirements of importation of too many unskilled foreign workers from abroad. In particular, it is useful to provide a comprehensive assessment and cost-benefit analysis of the impacts of aid on the environmental impact. But due to practical problems related to inadequate availability of accurate and reliable data and information it is somewhat problematic to cover all these issues in this paper. So, we leave that for more in-depth future study when adequate, accurate and reliable data and information are available. Therefore, we limit our assessment of the negative impacts to available data on the negative impact of the increase in total debt to Sudan as a result of Chinese loans to Sudan (1997-2007).

Since the Chinese aid policy toward Sudan is mainly based on giving aid and development assistance to projects, this stylised fact implies that the best assessment of the effectiveness of Chinese aid is through assessment of the effectiveness: positive and negative impacts at project level. Therefore, the next section will use primary data from the interview with the managers of the selected cases studies of seven projects to examine the effectiveness or impacts of Chinese aid, development assistance, loans and grants in Sudan over the period (1999-2007). The selection of these cases is based on the findings in section 2 above which implies that the Chinese aid, development assistance, loans and grants offered to Sudan are biased towards specific sectors (services and infrastructure: building and construction, electricity and water supply) over the period (1997-2007). For instance, the share of electricity projects, Khartoum refinery project and Merowe dam and related projects represent 70% of the total Chinese aid and development assistance offered to Sudan over the period (1997-2007)- see Table

4 above. Therefore, based on this finding, it is useful to discuss the results and the implications of the eight selected cases studies in section 4 below.⁹

5. Research Results

Based on the above and based on projects assessment, this section discusses the results and assesses the effectiveness of Chinese aid, loans and grants to Sudan in financing development in Sudan over the period (1997-2007).¹⁰ We first discuss the positive impacts and then show the negative impacts of Chinese aid and loans to Sudan during the period (1999-2007).

To examine the impacts of Chinese aid, loans and grants to Sudan over the period (1999-2007) we use primary data from the interview with the managers of the selected cases studies of seven projects. The results of the interviews with these managers of the projects indicate the effectiveness and significant contribution of China aid, loans and grants in the implementation of their projects. In particular, in these projects the percentage share of the contribution of the Chinese aid, loans and grants in total aid, loans and grants offered for implementation of these projects is important as can be seen from many important indicators. For instance, the share of China in total capital and finance (71%-100%), increase availability of machines and equipment (70%-100%), improve training and capacity building in the project (50%-100%), increase in technology transfer and knowledge transfer (50%-90%), increase employment opportunities (26%-100%) and increase availability of raw materials (5%-100%). Therefore, Chinese aid, loans and grants offered for implementation of these projects has been extremely important for creating many positive impacts in many important indicators. For instance, increase availability of the services (100%), increase in skill level (100%), increase or growth in production (88%), increase in transfer of knowledge (88%), increase availability of machines, equipment and raw materials (75%), increase in employment opportunities (75%), improve capacity building in the project (75%) and increase in technology transfer (63%). For example, the Chinese aid, loans and grants offered for implementation of these projects has been extremely important for creating many positive impacts in many important indicators. For instance, increase or growth in production (12%-120%), increase availability of the services (60%-120%), increase in technology transfer (50%-100%), increase in the transfer of knowledge (30%-100%), increase in skill level (25%-100%), increase availability of machines, equipment and raw materials (20%-100%), improve capacity building in the project (10%-100%) and increase in employment

⁹ The interviews were conducted with the managers of the selected cases studies of seven projects in Sudan in 2009. The eight selected cases studies include four fully completely projects: Merowe Dam Project, Merowe-Karima Friendship Bridge Project, Khartoum Refinery Project and Elgaili-Garri 2 Electricity Project. In addition to two projects in which 95% of the work is almost completed: Garri 4: Petroleum Charcoal Electricity Project and White Nile Grids: Rabak-Obied Third Circuit Elroseires-Khartoum Electricity Project. Further to two proposed projects in which the work is recently started: Al Fula Electricity Power Plant Project and Dongla-Wadi Halfa Electricity Transmission Line Project.

¹⁰ Although it is difficult to distinguish between the classification of aid and investment projects which the Chinese implemented in Sudan, but the case studies discussed in this section as classified by Sudan's ministry of finance and national economy and Sudan's ministry of international cooperation and the central bank of Sudan are project implemented with Chinese loans and grants and as such are classified as projects implemented within Chinese aid and development assistance to Sudan.

opportunities (5%-70%). One important implication for capacity building is the increase of training (internal and external), for example, many of the Sudanese workers in these projects are trained within Chinese aid and development assistance for implementation of these projects, this includes labours, technicians and engineers in different fields or disciplines related to the Chinese aid and development assistance for the implementation of these projects. The training of the Sudanese workers in these projects trained within Chinese aid, development assistance, loans and grants for implementation of majority of these projects has been mainly demanded and driven by the management department in these project (75%) and in three cases is driven jointly by the management department in these project together in close cooperation with Chinese companies implemented these projects (38%).¹¹ - See Table 6 below.

Table 6- The share and impacts of the Chinese aid and development offered for the implementation of the selected projects

Selected projects and selected indicators	Range for all projects
(a) The share of the Chinese in total (%)	
Capital and finance	71%-100%
Employment	26%-100%
Training	50%-100%
Increase in knowledge transfer	50%-90%
Increase in technology transfer	50%-90%
Improve capacity building in the project	50%-100%
Increase availability of machines	70%-100%
Increase availability of equipment	70%-100%
Increase availability of raw materials.	5%-100%
(b) The positive impacts of the Chinese aid (%)	
increase or growth in production	12%-120%
Increase availability of the services	60%-120%
increase in employment opportunities	5%-70%
increase in skill level	25%-100%
increase in knowledge	30%-100%
increase in technology transfer	50%-100%
Improve capacity building in the project	10%-100%
Increase availability of machines, equipment and raw materials	20%-100%
Training fields	All Engineering fields related to implementation of these projects

Source: own calculations based on the results of Nour (2009): Interviews on China-Sudan Aid Relations. Note: n.a. not available.

We are aware of the fact that it would be interesting to benchmark the results on the Chinese aid projects against the non-Chinese aid projects implemented in Sudan. But due to practical problems related to inadequate availability of accurate and reliable data and information it is somewhat problematic to cover all these issues in this paper. So, we leave that for more in-depth future study when adequate, accurate and reliable data and information are available. Moreover, the focus on the role of China aid, loans and grants in financing development in Sudan is important in view of the fact that Sudan was not receiving aid from most traditional donors (except for emergency, and humanitarian, aid) during the period 1997-2007; but it became an oil exporter in 1999 and its economic relationship with China has intensified and as a result China become not only the major investors in Sudan's oil sector and main trade partner for Sudan but

¹¹ Although the 100 percent share being attributed to China in the indicators is questionable, but it is worthy noting that the 100% implies that the contribution and share in some indicators are completely attributed to Chinese aid, development assistance, loans and grants to the selected projects, whereas Sudan government and other donors have no contribution and share in some indicators. For instance, other Arab donors contributed to capital and finance only in Merowe dam, and they have no contribution in other selected projects. For all other seven selected projects, China is the only donor or partner contributed to implementation of these projects, in all of these seven selected projects. Because of the shortage of domestic capital these projects are either completely or largely financed by Chinese aid, development assistance, loans and grants.

also the major donor offering aid, development assistance, loans and grants to Sudan. Therefore, we limit our assessment and analysis in this paper to compare the key characteristics and features of Chinese aid, loans and grants offered for the implementation of the selected projects in Sudan over the period (1997-2007). The managers of the selected projects indicate several key characteristics and features of Chinese aid loans and grants offered for the implementation of the selected projects in Sudan over the period (1997-2007). We find that for instance, the Chinese aid is by nature of such contracts is characterized by being unconditioned (political), focused on developmental issues and committed to easy process (Merowe dam project). We find that different from other donors Chinese aid concentrates on comprehensive development issues to achieve multi purposes (e.g. Merowe Dam Project). Chinese aid not only significantly contributed to capital and finance but also significantly contributed to construction or implementation of civil works, provision of mechanical equipments, provision of human capital and capacity building by offering internal and external training for Sudanese. In addition, the Chinese are characterized by flexibility (Al Fula Power Plant project), offering acceptable prices and making equipments available (Dongla –Wadi Halfa Electricity project) and the Chinese machines, equipment and raw materials are characterized by being: cheapest, suitable and simple for maintenance (Elgaili - Garri 2 project). In addition, the Chinese is characterising by being the only partner completely financing the implementation of the project by offering fund in the form of grant (Merowe Karima Friendship project), in the form of loan (White Nile Grid Project) and in the form of loan focusing on partnership (50%) and based on mutual benefit or entirely commercial relations (Khartoum refinery project). In addition, the Chinese is characterising by being also the only source of raw materials and inputs used in the implementation of the project (White Nile Grid Project) and by offering facilitation of initiating the bridge project until completion (Merowe Karima Friendship project).

Our findings in this paper imply that the Chinese aid, loans and grants seem to be allocated or utilized in their targeted or assigned objectives for the implemented projects in Sudan. The Chinese aid, loans and grants offered to the selected projects are effective because they can be perceived as complementary to local resources to help infrastructure development "to close investment-saving gap". But the effectiveness of the Chinese aid, loans and grants offered to these projects is somewhat undermined by the Chinese conditionality of tied aid. For instance, our results find a link between the offer of the Chinese aid, development assistance, loans and grants upon satisfaction of specific conditionality requirements. For instance, in the opinion of the managers of these projects, the Chinese aid, development assistance, loans and grants has been extremely importantly tied to trade in oil and export of Sudanese oil to China (75%), tied to the implementation of these projects by the Chinese companies (75%), tied to the purchase of machines, equipment and raw materials from China (88%), it is moderately tied to investment in oil (63%) and to utilization of Chinese inputs and labour (63%) and slightly tied to the purchase

of other Chinese goods and services (38%)- See Table 7 below. Therefore, Our findings are consistent with the stylized facts in the literature which implies that the Chinese aid and development assistance to poor countries is also usually ‘tied’ to oil, purchase of the Chinese goods and services, generally by the Chinese companies, utilizing the Chinese inputs and labour, undermining the effectiveness of the Chinese aid to poor countries, this implies that China aid to Sudan is tied to trade, FDI and the importance of oil to Chinese economy.

Table 7- The importance of the impacts and conditionality tied to Chinese aid and development assistance in selected projects

selected indicators	Importance (%)
(a) The importance of the Chinese aid and development assistance in creating positive impact	
increase or growth in production	88%
Increase availability of the services	100%
increase in employment opportunities	75%
increase in skill level	100%
increase in knowledge	88%
increase in technology transfer	63%
Improve capacity building in the project	75%
Increase availability of machines, equipment and raw materials.	75%
(b) The importance of the conditionality tied to the y Chinese aid and development assistance	
Tied to trade in oil and tied to export of Sudanese oil to China	75%
Tied to investment in oil	63%
Tied to Implementation of the project by Chinese companies	75%
Tied to purchase of machines, equipment and raw materials from China	88%
Tied to the purchase of Chinese goods and services,	38%
Tied by utilizing Chinese inputs and labour,	63%

Source: own calculations based on the results of Nour (2009): Interviews on China-Sudan Aid Relations.

Based on the above results of the positive impacts of the Chinese finance for all the selected projects, it is also useful to examine the negative impacts of the Chinese aid and loans to Sudan. We limit our assessment of the negative impacts to available data on the negative impact of the increase in total loans and debt to Sudan as a result of the robust and increasing intensification of China and Sudan economic relations over the period (1997-2007). We find that the increase in the inflow of Chinese loans on the one hand, has some positive impacts by financing development projects in Sudan, but on the other hand, we realize that it has a negative impact by increasing Sudan external obligations and debts and therefore, undermines the effectiveness of Chinese aid to Sudan. Table 8 below shows the increase in Sudan's total debt and debt to China during the period (1999-2007), for instance, Sudan's total debt increased from US\$ 8863099 in 1999 to US\$ 8239843.371 in 2007. In particular, Sudan's debt to China increased from US\$ 7738 in 1999 to US\$ 1157697062 in 2007. The share of China in Sudan's total debt increased from 0.9% out of Sudan total debt in 1999 to 13.45% out of Sudan total debt in 2007. Hence, our results in this section confirm the second stylised fact which implies that China aid, development assistance, grants and loans caused mixed positive and negative impacts for Sudan during (1997-2007).

Table 8- The total and share of China's Debt to total Debt in Sudan (1999-2007) (US\$ millions and %)

Items	1999	2002	2003	2004	2005	2006	2007	Total
China	7738	7,738.00	782,284	702,484	51,928.99	1,143,967,062	1,157,697,062	2303216297
Total	8863099	7,029,815.36	7,645,959	7,639,824	30,539,517.77	8,239,843,371	8,609,533,371	16911094957
China (%)	0.09%	0.11%	10.23%	9.20%	0.17%	13.88%	13.45%	13.62%

Source: Central Bank of Sudan (External Debt Unit) and Ministry of Finance and National Economy

Apart from the debate on the mixed impacts of China aid, grants and loans to Sudan, we find that the robust and increasing intensification of China and Sudan economic relations implies opportunities for financing development in Sudan. In particular, despite a long period of economic sanctions, Sudan was able to grow thanks to special economic relations with China which relaxed the development finance constraint. From the perspective of the new approaches to financing development our findings from the case of Sudan imply that even when a country is facing binding political and economic sanctions, it can still be able to finance a high growth strategy if it is endowed with natural resources and a partner that is in need for such resources. Furthermore, from the perspective of the new approaches to financing development our findings from the case of Sudan imply that the Chinese aid, loans and grants to the selected projects is effective because it goes beyond the conventional approach by focusing not only on humanitarian assistance and financial aspects but also offering new model of development by focusing also on sustainable development aspects. Therefore, China aid to selected projects can be perceived as complementary to local capital and resources that not only significantly contributed to capital and finance, but also significantly contributed to provision of human capital and capacity building by offering training and so enhancing sustainable developmental issues in Sudan.

6. Conclusion and Policy Recommendations

This paper fills the gap in the Sudanese literature and discusses the effectiveness of Chinese aid, loans and grants for financing development in Sudan using new primary data collected through interviews at the micro (project) level in Sudan in 2009.

We verify the first stylised fact on the significance of China in financing development in Sudan as China's share increased greatly from 17% in 1999 to 73% in 2007 out of total loans and grants offered to Sudan. We confirm the second stylised fact that China aid, grants and loans offered to Sudan caused mixed positive-negative impacts; the positive impact is offering alternative complementary source of finance to complement domestic capital and financing development projects, the negative impact is increasing Sudan debts to China from 0.9% in 1999 to 13.45% in 2007 out of Sudan total debts. We find that the effectiveness of China aid to Sudan is undermined by offering aid tied to trade, FDI and importance of oil to Chinese economy. We find that despite the recent global economic crisis the inflow of Chinese aid and development assistance continues to Sudan over the period (2008-2009), this implies that China has maintained offering tied aid to maintain its access to oil in Sudan.

We find that the robust and increasing intensification of China and Sudan economic relations imply opportunities for financing development in Sudan. In particular, despite a long period of economic sanctions, Sudan was able to grow thanks to special economic relations with China which relaxed the development finance constraint in Sudan. From the perspective of the

new approaches to financing development our findings from the case of Sudan imply that even when a country is facing binding political and economic sanctions, it can still be able to finance a high growth strategy if it is endowed with natural resources and a partner that is in need for such resources. Furthermore, from the perspective of the new approaches to financing development our findings from the case of Sudan imply that the Chinese aid, loans and grants are effective because they go beyond the conventional approach by focusing not only on humanitarian assistance and financial aspects but also offering new model of development by focusing also on sustainable development aspects. Therefore, China aid to selected projects can be perceived as complementary to local capital and resources that not only significantly contributed to capital and finance, but also significantly contributed to provision of human capital and capacity building by offering training and so enhancing sustainable developmental issues in Sudan.

Based on our findings discussed above, the major policy recommendations include improving the effectiveness and increasing the benefits from the Chinese aid and development assistance to Sudan with priority given to financing particularly projects contributing to poverty reduction and sustainable and balanced development projects in Sudan. Further to putting special emphasis on capacity building, transfer of technology and knowledge. In addition to consideration of future sustainable debt level by reducing the potential risk of increasing Sudan's debt obligations and reducing contracting new Chinese commercial loans with large interest rate. Further to reducing reliance on Chinese tied aid to Sudan, and encouraging China to confirm commitment to the Paris Declaration to cease from offering tied aid to Sudan. In addition to improve the institutional framework and arrangements to increase the benefit from Chinese aid, development assistance, loans and grants to Sudan.

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