

## AN EMPIRICAL ANALYSIS OF CHINESE CONSTRUCTION FIRMS' ENTRY INTO AFRICA

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### ABSTRACT

Based on original empirical data collected through an interview and questionnaire survey, this paper analyzes the intentions, strategies, and risk management perspectives of Chinese construction firms (CCFs) active in Africa. It summarizes the qualitative evidence from the survey and the main trends that emerge from analyzing the data as a whole. The study offers a unique look into the mindset and philosophy of the biggest players in the Chinese construction industry, at a time when they are expanding aggressively beyond their traditional home market into Africa and beyond.

**Key Words:** Chinese construction firm, Africa, market entry, entry strategy, international construction

### I. INTRODUCTION

The rising commercial, financial and political profile of the People's Republic of China (henceforth, China) in Africa has been noted by many observers and influential reports. *Le Monde*, the influential French newspaper, asked whether Africa will be Chinese in a decade and observed that, while this question would have sounded far-fetched ("fantaisiste") just a few years ago, it is now taken seriously in Western chancelleries. In fact, the Council on Foreign Relations 2006 report on a new strategic US approach towards Africa devotes 15 pages out of 130 to assess the impact of China's increasing role in the continent. As Jeffrey Sachs put it at a conference in Beijing in August 2006, "China gives fewer lectures and more practical help" and thus offers Africa something new, "a straightforward business relationship between equals based on mutual interest and non-interference in the internal affairs of its allies".

The drivers of this phenomenon are multifaceted. There is no doubt of "China's increasing need for energy sources and raw materials to fuel its rapidly growing economy" (CCS 2006) is principal among these. Nonetheless, others are also important, if not equally important. In particular, "Chinese leaders and strategists believe China's historical experience and development model resonate powerfully with African counterparts, thereby creating a comparative advantage vis-à-vis the West" (Gill *et al.* 2006, v). They also believe that "Africa is on the verge of a developmental takeoff" (*ibid.*).

This latter feature is particularly important for Chinese construction firms (henceforth, CCFs). Faced with the growing interest of foreign contractors to participate in the tremendous

opportunities created by the rapid increase in China's construction demand and the (partial) liberalization of the construction market after China's WTO entry, CCFs are actively involved in the international construction arena. According to the China International Contractors Association (CHINCA 2005), China has become the world's sixth-largest engineering and construction export country, with a 2005 turnover of US\$21.76 billion. In 2005, Chinese contractors signed 49 contracts worth over US\$100 million each (CHINCA 2005). In January-August 2006, China did US\$17.1 billion of overseas contracting business, up 45.5% year-on-year. According to the Chinese Ministry of Commerce, there was a 106% rise in the value of newly-signed contracts, taking the total up to US\$32.7 billion. The nation's turnover in overseas contracting business is expected to increase by 15% year-on-year during the 11<sup>th</sup> Five-Year Plan period (2006-10) and reach US\$50 billion. In 2006, for the first time ever, there were two CCFs among the *Engineering News-Record* Top 10 Global Contractors list and five more among the top 50 (ENR 2006).

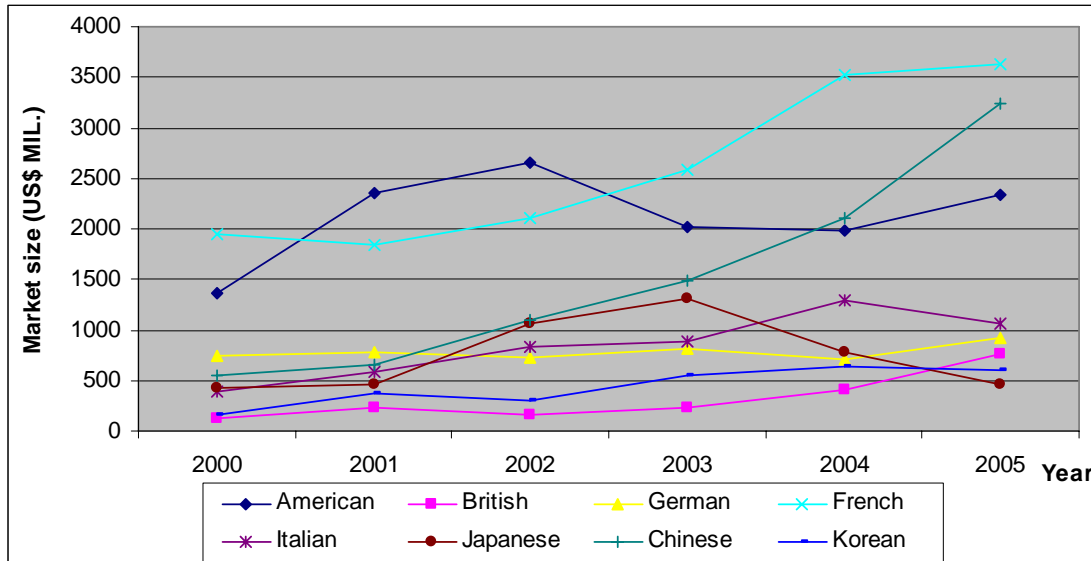
Because of the foreign aid program towards Africa ever since China's establishment, the African construction market has been a traditional territory for Chinese contractors, most famously for the construction of the Tazara railways linking Zambia's copper mines to ports on the Indian Ocean, as well as government buildings and stadia, often financed by China itself. Over the past few years the number of contracts awarded to Chinese firms, the financial amounts and technical complexities, and the range of countries and sectors all have seemingly exploded. Moreover, while the scale of Chinese official development assistance (ODA) to Africa has also increased, Chinese firms have proven capable of winning open tenders. Currently the African market has become one of the fastest growing regional markets following Asia. From 2000 through 2005, top CCFs in enjoyed an average grow rate of 25.49% (see Table 1). When considering ENR Top 225 International Contractors' penetration in African, still European contractors had the largest market share (49.33% in 2005), and French firms alone occupied 23.96%, higher than CCFs by 2.6%. The entire African market is booming with an average growth rate of 14.84% from 2000 through 2005. In the same period, among major players, American, British, Italian, Japanese, Chinese and Korean contractors had an average growth rate higher than that of the entire market.

**Table 1:** How Top International Contractors Shared the African Market from 2000 through 2005 by Their Nationality (Data source: *Engineering News Record* 2001, 2002, 2003, 2004, 2005 and 2006)

Contractor Nationality	2000		2001		2002		2003		2004		2005		Growth rate	
	Market size (US\$ m)	Market share	Market size (US\$ m)	Market share	Market size (US\$ m)	Market share	Market size (US\$ m)	Market share	Market size (US\$ m)	Market share	Market size (US\$ m)	Market share	Market size	Market share
American	1364.2	17.86%	2362.4	26.79%	2650.2	23.79%	2009.4	15.88%	1976.6	13.84%	2334.3	15.42%	15.53%	0.83%
Canadian	5	0.07%	0	0.00%	9	0.08%	0	0.00%	0.5	0.00%	1.3	0.01%	N/A	N/A
European	3953.4	51.75%	4111	46.61%	4951.4	44.45%	5883.1	46.49%	7129.5	49.91%	7467.7	49.33%	13.84%	-0.76%
- British	128.8	1.69%	223.4	2.53%	153.1	1.37%	224.6	1.77%	406.2	2.84%	762.5	5.04%	51.45%	34.20%
- German	749.7	9.81%	787.4	8.93%	719.5	6.46%	807.4	6.38%	715.1	5.01%	926.1	6.12%	5.34%	-7.45%
- French	1942.2	25.42%	1842.6	20.89%	2112.6	18.97%	2590.7	20.47%	3527.4	24.70%	3627.5	23.96%	14.23%	-0.29%
- Italian	391.2	5.12%	590.3	6.69%	838.9	7.53%	879	6.95%	1294.1	9.06%	1062.9	7.02%	25.43%	8.68%
- Dutch	129.9	1.70%	16.3	0.18%	145	1.30%	113	0.89%	2	0.01%	8	0.05%	176.36%	132.56%
- Other	611.7	8.01%	651	7.38%	982.3	8.82%	1268.5	10.02%	1184.7	8.29%	1080.7	7.14%	14.21%	-1.17%
Japanese	422.5	5.53%	456.6	5.18%	1059.5	9.51%	1304.3	10.31%	778	5.45%	466.9	3.08%	16.58%	-0.97%
Chinese	540	7.07%	654.1	7.42%	1103.9	9.91%	1492.1	11.79%	2106.8	14.75%	3233.5	21.36%	43.95%	25.49%
Korean	152	1.99%	372	4.22%	308.4	2.77%	556.6	4.40%	643.3	4.50%	598.6	3.95%	43.35%	25.34%
All others	1202.7	15.74%	863.2	9.79%	1055.8	9.48%	1409.9	11.14%	1649.1	11.55%	1036.8	6.85%	1.49%	-12.10%
All firms	7639.9	100.00%	8819.3	100.00%	11138.2	100.00%	12655.5	100.00%	14283.8	100.00%	15139.1	100.00%	14.84%	0.00%

If we examine the relative market shares of the top international contractors during the time period, it can be observed that American and Japanese are playing a decreasing role in the global construction market after reaching a peak in 2002 and 2003 respectively (see Figure 1). On the

other hand, CCFs' are growing rapidly and are expected to overtake their French colleagues to become the market leaders within the next few years.



**Figure 1:** The Growth of Market Share of Top International Contractors by Their Nationality in Africa (Data source: Engineering News Record 2001, 2002, 2003, 2004, 2005 and 2006)

## 2 Research Goal and Method

This study aims at a better understanding of the actions, decisions, and situations of Chinese contractors in Africa.

Main institutions that are involved in the official Chinese policy of supporting, financing, and building African infrastructure were identified. This list includes MOFCOMM, China Exim Bank, CHINCA and some State-Owned Enterprises that are playing a major role in Africa. To facilitate the face to face interview, all these organizations selected are headquartered in Beijing. At last 10 individuals of high position from the following 9 organizations accepted the request for an interview:

- Ministry of Commerce (MOFCOMM)
- China Exim Bank (Exim Bank)
- China International Contractors Association (CHINCA)
- China International Water & Electric Corp. (CIWEC)
- China Oil & Gas Pipeline Bureau (CNPC Pipeline)
- China State Construction Engineering Corp. (CSCEC)
- China Civil Engineering Construction Corporation (CCECC)
- Beijing Construction Engineering Group (BCE)
- China Road & Bridge Corporation (Road & Bridge)

Their personal information is, however, kept confidential and their opinions do not reflect those of their organizations.

Face-to-face interviews with these respondents were then conducted in Beijing. Examples of the types of questions that were covered in these interviews include the following:

- What types of financing typically support the projects being constructed by CCFs in Africa?

- How do CCFs win work in Africa—international competitive bidding, competitive bidding among Chinese firms, or sole source negotiation?
- What kinds of environmental and social safeguards are in place, for projects executed by CCFs?
- How do CCFs perceive the strength, weakness, opportunities, and threats in the African market?

Following the face-to-face interviews, a wide-ranging survey was conducted of a representative sample of CCFs in Africa. The CCFs universe is already well documented from two sources. One includes the ENR list of the world’s top 225 international contractors and the top Chinese contractors by 2005 revenue (ENR 2006). In addition, Tsinghua University has developed a dedicated CCF database. The two lists combined are believed to cover approximately 90-100% of the full universe of large-scale CCFs. From this merged database and according to the suggestion of an official from CHINCA, a list of 35 contractors was developed which includes the CCFs most active in Africa in recent years.

The development of the survey instrument was informed by earlier construction industry surveys, including the World Bank’s “Silk Road” project (Broadman 2006). The questionnaire included modules relating to motivation, challenges, strategy, financing, state guidance, procurement, environmental safeguards, technology, and entry strategies. A combination of open- and close-ended questions was used and appropriate coding methods were applied.

**Table 2:** Survey Participants (Data source: ENR 2006)

China Construction Firm	International revenue (US\$ MIL.)	Total revenue (US\$ MIL.)	ENR ranking	Location
China Jiangsu International Economic-Technical Cooperation	102.3	191	142	Jiangsu
Chongqing Construction Engineering Group	33.5	78	206	Chongqing
China Dalian International Cooperation (Group) Holdings	90.4	228.9	153	Liaoning
Beijing Uni-Construction Group	38.8	866.3	202	Beijing
Jiangsu Geology & Engineering	N/A	N/A	N/A	Jiangsu
China Shanghai Corporation for Foreign Economic & Technological Cooperation	75.3	101.5	162	Shanghai
Fujian Construction Engineering Group Corporation	N/A	N/A	N/A	Fujian
China Huanqiu Contracting & Engineering	49.9	89.6	185	Beijing
China Weihai International Economic And Technical Cooperative	N/A	N/A	N/A	Shandong
Qingdao Construction Group Corporation	143	769	129	Shandong
China Jiangxi Corporation for International Economic & Technical Cooperation	36.5	36.5	204	Jiangxi
China Nuclear Industry Huaxing Construction	N/A	N/A	N/A	Beijing
China Railway Engineering Corporation	477.9	15,359.80	67	Beijing
China National Overseas Engineering Corporation	159.3	185	123	Beijing
Shanghai Urban Construction (Group)	N/A	N/A	N/A	Shanghai
Beijing Municipal Engineering Group	23.6	798.2	217	Beijing
China Water Conservancy and Hydropower	N/A	N/A	N/A	Beijing

Engineering Bureau No.5				
Transtech Engineering Corporation	44.1	61.2	194	Sichuan
Hunan Construction Engineering Group Corporation	N/A	N/A	N/A	Hunan
China National Machinery Industry Complete Engineering Corporation	759.5	1,269.50	50	Beijing
Jiangsu Nantong No.3 Construction Group	47.5	675	189	Jiangsu
China Road & Bridge Corporation	759.5	1,269.50	50	Beijing
China Petroleum Engineering Construction Group	552.5	552.5	60	Beijing
Henan Province Construction Engineering Corporation	N/A	N/A	N/A	Henan
China National Machinery & Equipment Import & Export Corporation	107.2	107.2	138	Beijing
China National Electronics Import & Export Corporation	N/A	N/A	N/A	Beijing
Nanjing Dali Construction Group	N/A	N/A	N/A	Jiangsu
Sinohydro Corporation	460.3	3,867.10	68	Beijing
Jintan Construction and Installation Engineering Company	N/A	N/A	N/A	Shandong
China Major Bridge Engineering	N/A	N/A	N/A	Hubei
China International Water & Electric Corp.	270	355.1	97	Beijing
China Oil & Gas Pipeline Bureau	50.6	71.5	183	Hebei
China State Construction Engineering Corp.	2,076.10	12,525.00	20	Beijing
China Civil Engineering Construction Corporation	355.5	412.2	76	Beijing
Beijing Construction Engineering Group	53.5	2,502.10	180	Beijing
Total	6766.8	42371.7	N/A	N/A

Survey instruments were then faxed to the sampled contractors. All the 35 CCFs responded to the questionnaire survey. 23 out of the 35 CCFs were listed in the ENR 2006 Top International Contractors with a total revenue of US\$ 67.7 million. Noticeably only 6 out of 35 firms are headquartered in western and central regions of China with the remaining ones in Beijing or eastern coastal municipalities and provinces.

### 3 Distribution of CCFs in Africa

All of the CCFs who responded to the survey have had operations in Africa in the past six years. In sub-Saharan Africa, the countries that record the highest number of active CCFs are Angola and Nigeria (10), Botswana (9), Congo (8), Equatorial Guinea, Ethiopia, Ghana, South Africa, and Uganda (7); in North Africa, 13 CCFs operate in Algeria and 12 in Sudan. On average, a typical CCF is present in 5.06 sub-Saharan countries and in 1.20 North African ones. The details of the geographic distribution of the CCFs surveyed are depicted in Figure 2.



**Figure 2:** CCFs' geographic distribution in Africa

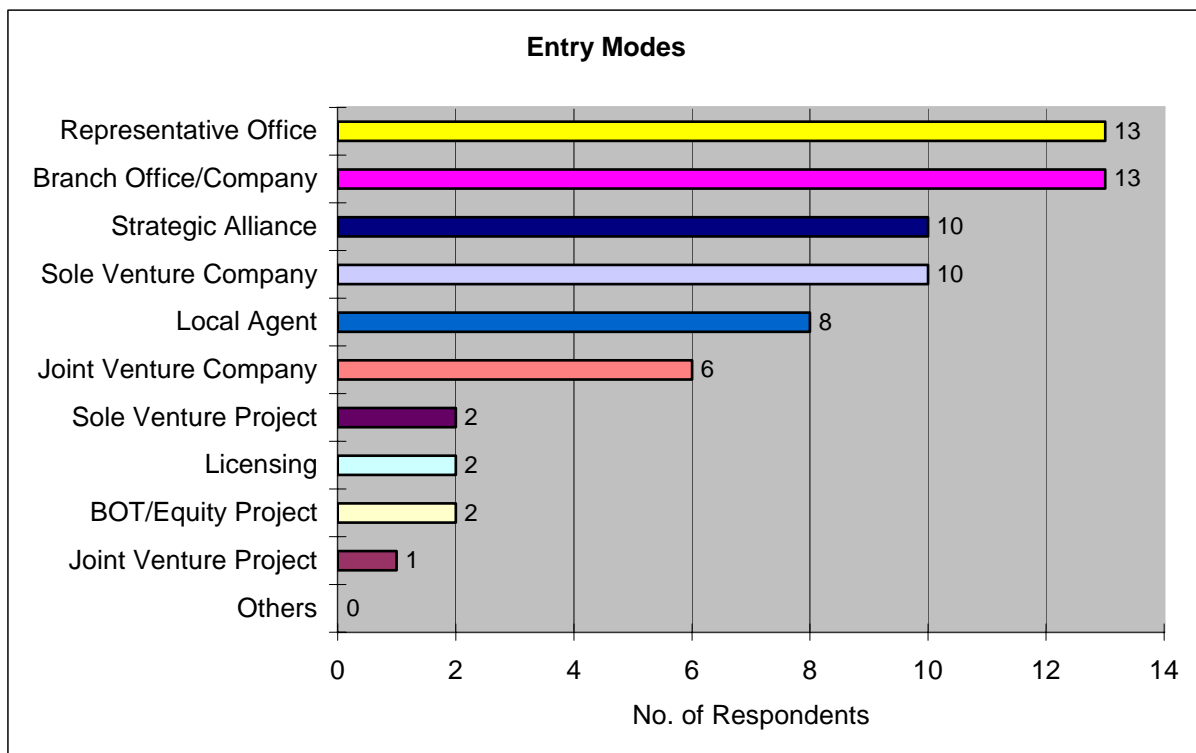
In terms of functional specialization, general building is by far the most common (36.4%), followed by water supply (20.7%), transportation (13%) and power (9.8%). As for the project types in Africa by the Chinese contractors, it appears that many are transportation projects. Basically there are a lot of building and infrastructure projects: housing, roads, bridges,

hydroelectric plants, and railroads. Chinese contractors are gradually doing more EPC general contracts (CHINCA).

As far as the average number of projects completed each year is concerned, the quality of the responses is uneven. Almost half of the respondents with African operations (15 out of 33) did not provide the data; for the remaining 18 CCFs, three report very high figures (170, 80, and 40 projects per year for China Jiangsu International Economic-Technical Cooperation, Qingdao Construction Group Corporation, and China Road & Bridge Corporation, respectively), with the remainder on the contrary quoting very low numbers. Similar limitations plague the analysis of the data on revenues.

#### 4. CCFs' MARKET ENTRY MODE FOR AFRICA

All basic entry modes have been applied by CCFs to enter the African markets (See Figure 3).



**Figure 3:** CCFs' Entry modes for Africa

It was found that CCFs typically opt for establishing representative offices or branches (13 each) as their preferred mode of entry into African markets. Localized sole venture company has increasingly been used by CCFs in Africa. It is striking to see that project joint venture is not as popular as it is in many other markets of the world. It seems that BOT/Equity is not impossible in Africa, despite the high risk involved and poor economic situation in most African countries. According to BCE, *“the Chinese enter the African market differently than Western construction companies. CCFs mainly enter through construction contracting and financing programs only started a few years back.”*

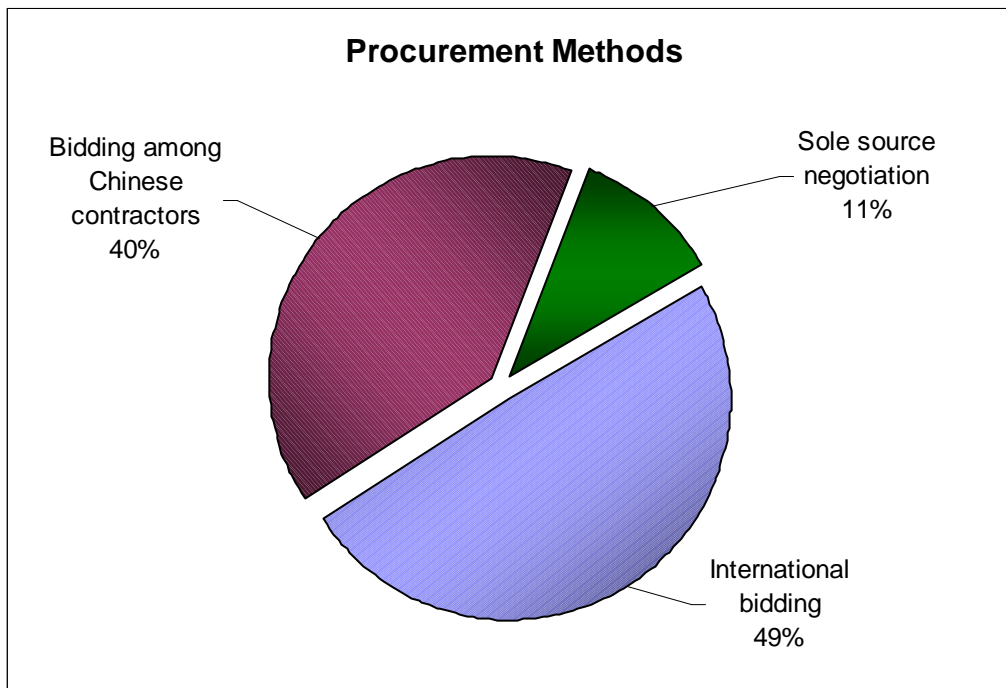
Cases were solicited from the CCFs about the market entry process that they had used for their most successful market in Africa, and it can be observed that CCFs usually entered an African market in an ad hoc manner without a formal strategic plan or long term commitment, and the Chinese government's involvement plays an important role in facilitating CCFs' market entries.

## 5 CCFS' LOCAL OPERATION IN AFRICA

### 5.1 Project pursuit

Far from expecting to secure as many jobs as possible, interviewed CCFs are in fact quite selective in maintaining a manageable portfolio of works. The project go/no go decision applied by CCFs, if represented by what the managers from CIWEC and BCE introduced, is not very different from their Western World colleagues.

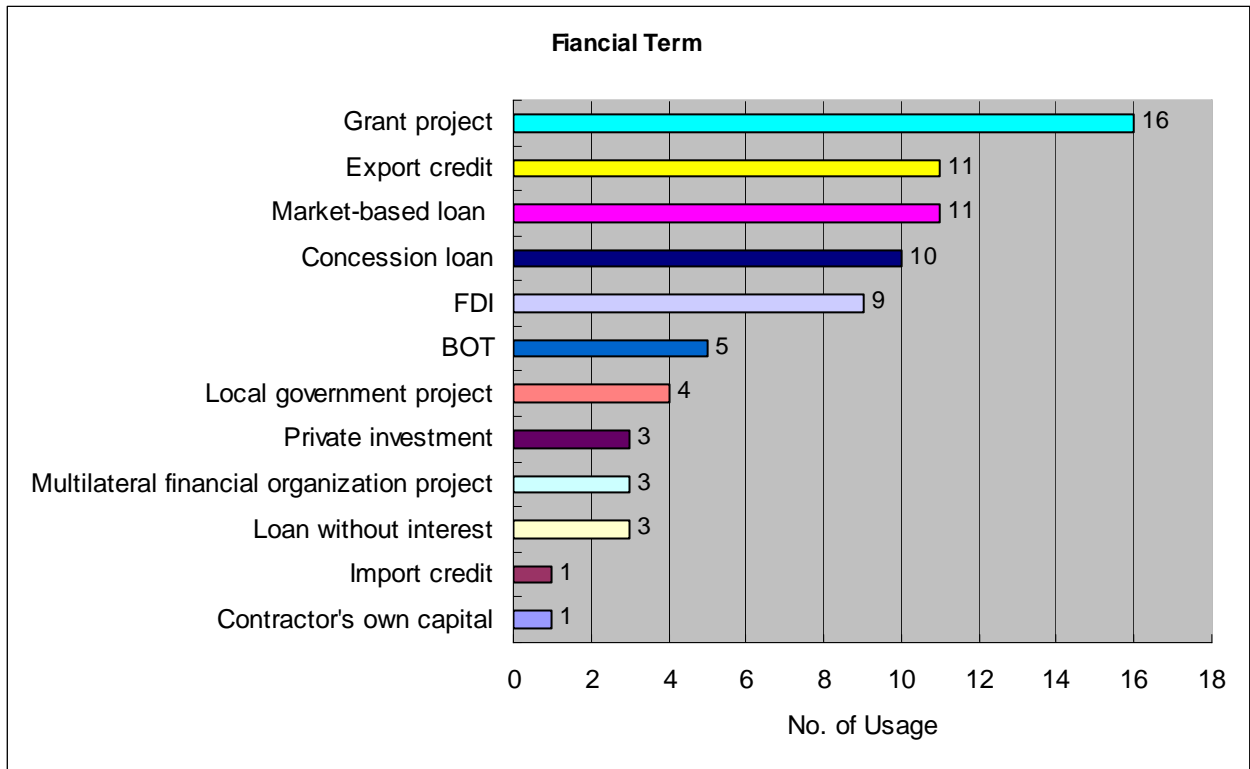
The CCFs were asked to evaluate the percentage of works acquired through three different procurement methods: International bidding, bidding among CCFs, and sole source negotiation. The evidence suggests that international bidding is the principal procurement method, representing slightly less than 50% of contracts won in Africa by CCFs (Figure 4). This result is in line with the evidence in Foster and Butterfield (2007), who show that CCFs are winning an increasing share of construction projects financed by traditional, non-Chinese, multilateral agencies. According to CIWE, "*The international projects we bid for are mainly funded by international financial organizations, including the World Bank, African Development Bank, Asian Development Bank, Saudi Arabian Foundation, Kuwaiti Foundation, UAE Foundation, and some EU foundations (sic)*".



**Figure 4:** Procurement methods of the projects CCFs executed in Africa

Still, bidding among Chinese contractors for projects that are financed by Chinese funds, is a not so-distant second method (almost 40% of projects) followed by sole source negotiation (11%).

As expected, most CCFs fund their African jobs through project grants (16) and export credit (11) (Figure 5). This is in line with previously-presented evidence, and in particular to the finding that the lion's share of Chinese financing for projects in Africa goes to energy-producing countries (Algeria, Angola and Nigeria) which in turn also supports the largest concentration of CCFs. Commercial and concessional loans are also important sources (10 each).



**Figure 5:** Financial terms of the projects CCFs executed in Africa

## 5.2 Material and equipment supply

Material supply is a big issue in Africa. Neither amount nor quality can meet the requirements of CCFs operating there. According to the respondent from CIWEC, “*there is almost nothing [in Africa]. Although there are some cement factories and brick factories in North Africa, it still cannot meet all needs of construction projects. In Sub-Sahara Africa, everything has to be imported.*”

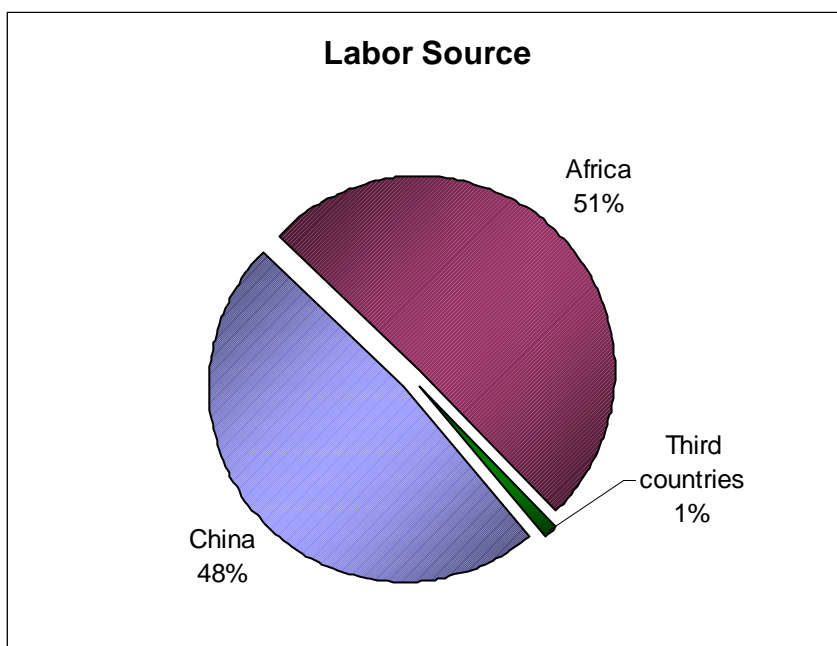
The interviewee from BCE added that, “*In many African countries, their building material supply and equipment do not reach our demand and standards....Most of the material and equipment are from outside the host country.*”

CCFs generally buy construction equipment from Chinese manufacturers. The motivation for preferring Chinese-made equipment is clear: “*although the quality is still not good enough, price is much lower. For example, for a 3-year project, we can import a foreign bulldozer, which costs US\$300,000 and can work for more than ten years. If we do not manage to win the next project, this bulldozer remains idle with high residual value. In contrast, although a Chinese bulldozer can only work for three years, it is very cheap (US\$100,000) and completely depreciated by the end of the project.*” (CIWEC)

The manager from CCECC mentioned the important consideration about maintenance (part/accessory availability and maintenance worker's expertise) in purchasing equipment: *"more than half of our equipment is made in China. There are various reasons, one of which is their lower cost. Another one is the source of the accessories. The Japanese equipment may not cost a lot, but their parts are very expensive. Another consideration factor is the level of the maintenance workers. They are more familiar with the Chinese equipment, but may not know much about the more advanced foreign-made equipment to take advantage of its latest technologies."*

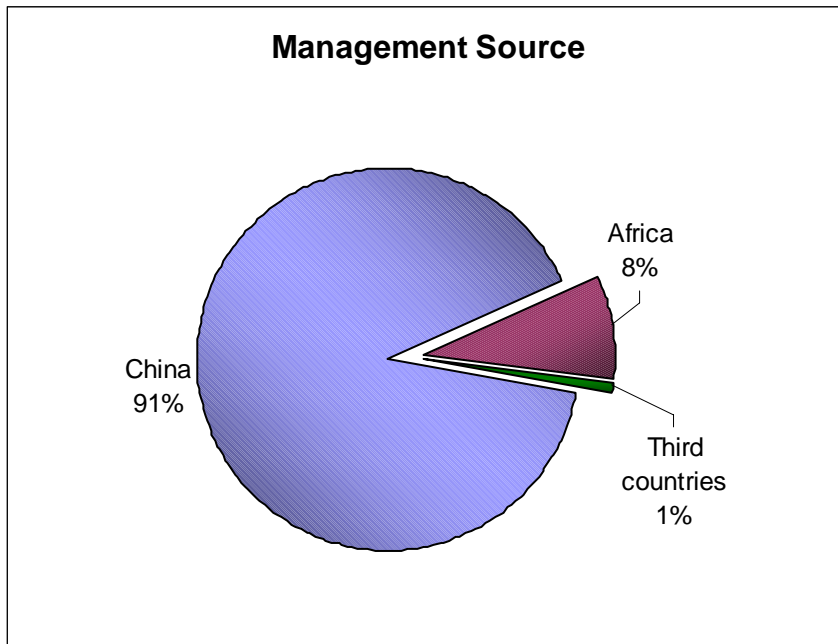
### 5.3 Work force

Of all the accusations that are levied at CCFs' operations in developing countries in general, and in Africa in particular, is that they use very little local labor. This lack of spillovers is argued to be particularly severe for trained managers and supervisors. Survey results are vague on this, as the high degree of variance among companies' reports on use of local labour is difficult to interpret. On average, CCFs employ an equal number of Chinese and local workers (see Figure 6) and they overwhelmingly resort to Chinese nationals for managerial positions. Indeed, fewer than 10% of the skilled workforce positions are occupied by locals (see Figure 7).



**Figure 6:** Labor source of CCFs in Africa

Interestingly, of the six CCFs that operate in 10 or more African countries, five show an above-average incidence of local labour – the exception being the China National Electronics Import & Export Corporation which probably engages in more sophisticated technical services and would therefore need to import highly-skilled technicians.



**Figure 7:** Management source of CCFs in Africa

#### **5.4 Standards, codes and technologies**

In Africa different construction standards and codes are used, and usually CCFs do not have much control of them but follow clients' decision or the local practices. When possible CCFs also try to recommend Chinese standards and codes to the client/engineer, which always meet or exceed typical practices in China. As introduced by CCECC, *"If we participate in a World Bank project, we must abide to the British standards. We cannot choose the standards, but sometimes we can make recommendations for our own domestic standard. We follow the decisions of the engineer, who decides on the standard to be used. Either way, it should not be any less than the Chinese domestic standard."*

Technology selection is primarily determined by the contractor with approval/confirmation of the engineer/superintendent. According to the respondent from CCCC, the selection is based on the specific project nature, rather than whether it is located in China or Africa.

## **6 SUMMARY AND CONCLUSION**

To summarize, cost competitiveness derived from access to cheap capital, low-cost labor, and cheap building materials, as well as political support from Beijing channeled through frequent high-level missions and effective on-the-ground communication are the main factors for the current success enjoyed by CCFs across Africa. CCFs were founded to compete mostly with other CCFs and they fear that this competition may exacerbate in the future if effective coordination mechanisms are not implemented. Indigenous construction companies do not represent a strong source of competition and are thought to lack financial and technical capacity. In fact, low skill and technology endowment limit the CCFs' interest in establishing collaborative ventures with local companies.

While political support from the Chinese government has undoubtedly played a critical role in softening the entry of Chinese companies, it was found that the Chinese face the same challenges as other construction players: economic and political instability, poor quality of local inputs (including both labour and construction materials), and weak infrastructure. Cultural misapprehensions also seem to be common, as stereotypes inform the respective images of Africans and Chinese.

This research paper is a first small step in a broader effort to decode the African markets (e.g., market demands, procurement methods, and major players), evaluate Chinese contractors' performance (e.g., market share, geographic coverage, and profitability) and review their entry strategies. Much further research is needed to explore specific answers to critical debates such as the role of government-to-government ties, the resolution of labour disputes, and the attitude towards social and environmental safeguards.

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