Chinese Contractors in Africa: Home Government Support, Coordination Mechanisms, and Market Entry Strategies

Chuan Chen[1] and Ryan J. Orr[2]

Abstract: Africa is a traditional overseas market for Chinese contractors. Since the launch of "going out' national strategy in the new century, and with the support and control of the government and subordinate agencies, associations and banks, and innovative approach such as Angola Mode, Chinese contractors' presence in the emerging African market continues to grow. Based on original empirical data collected through interview and questionnaire surveys, this paper analyzes the mechanisms the Chinese government has established to facilitate Chinese contractors' entry into Africa and the perspectives of Chinese contractors about the African market in terms of opportunities and threats. Regression analysis based on existing datasets indicates that despite perceived opportunities and threats, Chinese contractors' performance in Africa in terms of business revenue actually hinges upon the availability of construction capital. The study also reviews the market entry modes used by Chinese contractors, concluding that they prefer to establish a long term presence and opt to commit large resources. Overall, the paper summarizes evidence about the status and innovative approaches of Chinese contractors in penetrating the African construction market, and also characterizes the potential of the African construction market for Chinese contractors.

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Introduction

Chinese contractors have become active players in the international construction arena. According to the China International Contractors Association (CHINCA) (CHINCA 2005), "China Inc." has become the world's sixth-largest engineering contractor, with a 2005 turnover of U.S.$21.8 billion. In 2005, Chinese contractors signed 49 contracts worth over U.S.$100 million each (CHINCA 2005). Between January and August of 2006, China did U.S.$17.1 billion of overseas contracting business, up 45.5% over the same period in 2005. According to the Chinese Ministry of Commerce (MOFCOMM), there was a 106% rise in the value of newly signed contracts, taking the total up to U.S.$32.7 billion. The nation's turnover in overseas contracting business is expected to increase by 15% year-on-year during the 11th Five-Year Plan period (2006–2010) and reach U.S.$50 billion. In 2006, for the first time ever, there were two Chinese contractors among the *Engineering News-Record* (ENR) top 10 global contractors list and five more among the top 50 [*Engineering News-Record* (ENR) 2006].

China has had a long-standing policy of providing foreign aid to Africa, and Chinese overseas development assistance has become a key feature of intergovernmental relations, focusing on infrastructure development. As a result, the African construction market traditionally has been considered the territory of Chinese contractors. The activity of international contractors in Africa increased at an average annual rate of 15.4% between 2000 and 2006. According to the ENR top 225 international contractors, European contractors enjoy the largest share of the African market (41.5% in 2006) and French firms alone account for 21.2% of the market. For their part, top Chinese construction firms enjoyed an average growth rate of 46.2% between 2000 and 2006. Fig. 1 presents the total revenue of the top international contractors in Africa by nationality between 2000 and 2006. While most contractors have achieved portfolio growth, only American and Japanese firms have suffered decreasing performance in terms of total revenue after reaching a peak in 2002 and 2003, respectively. From 2000, French and American contractors have remained first tier market leaders. Chinese contractors, on a rapid growth curve, jumped from the second tier into the first one. Although French contractors were able to maintain the scope of their national portfolio, Chinese contractors managed to maintain a faster pace of growth and overtook their French competitors in 2006. In 2005, the Chinese contractors had 32% of their total international revenue coming from Africa, second only to Asia, which accounts for 50% (see Fig. 2).

Despite many previous studies on Chinese international contractors (e.g., Low and Jiang 2004; Pheng and Hingbin 2006; Pheng et al. 2004; Ofori and Zhao 2006; Shen et al. 2006; Zhao and Li 2008), there are still many unknowns about Chinese contractors and particularly their entry into Africa. It is valuable to investigate the status, practices, and performance of Chinese contractors as they enter the emerging African construction market, which is quite unique in comparison with other more mature regional markets.

[1]Lecturer, Faculty of Architecture, Building and Planning, Univ. of Melbourne, Parkville, VIC 3010, Australia (corresponding author). E-mail: chuanc@unimelb.edu.au

[2]Executive Director, Collaboratory for Research on Global Projects, Stanford Univ., Stanford, CA 94305. E-mail: rjorr@stanford.edu

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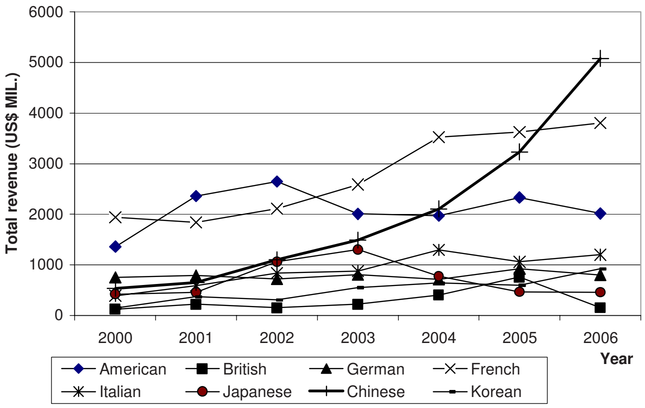

Fig. 1. Total revenue of top international contractors in Africa by nationality, 2000–2006 (source: *Engineering News-Record*, various years)

Research Goal and Method

This study aims to characterize Chinese contractors' entry into the African construction market, and specific research objectives include

1. To better understand the role and innovative arrangements of the Chinese government in promoting, supporting, and controlling Chinese contractors' entry into Africa.
2. To assess Chinese contractors' perception of the opportunities and threats about the African market, and how these factors impact their market entry into Africa.
3. To review the entry modes Chinese contractors apply to penetrate the African market.

In terms of method, the research began by identifying the main institutions involved in the official Chinese policy of supporting, financing, and building African infrastructure. This list includes the Ministry of Commerce (MOFCOMM), China Exim Bank, CHINCA, and some state-owned enterprises that are playing a major role in Africa. Face-to-face interviews with "friendly individuals" at these organizations were requested by using the Tsinghua Univ. network of alumni and industry relationships. In the end, 10 interviews were conducted with high-level officials/managers from the following nine organizations:

- MOFCOMM;
- China Exim Bank (Exim Bank);
- CHINCA;
- China International Water and Electric Corporation;
- China National Petroleum Corporation Pipeline Bureau (CNPC pipeline);
- China State Construction Engineering Corporation (CSCEC);
- China Civil Engineering Construction Corporation;
- Beijing Construction Engineering Group; and
- China Road and Bridge Corporation (road and bridge).

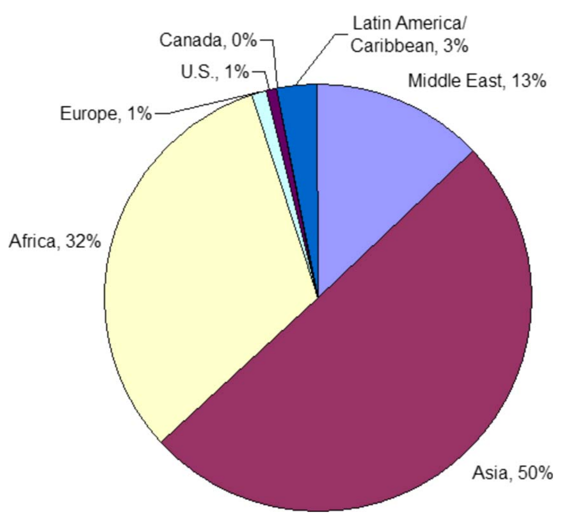

Fig. 2. Chinese contractors' internal revenue by regional market in 2005 data source: *Engineering News-Record* (ENR) (2006)

In order to ensure open and forthcoming interviews, respondents were promised that their personal identities would not be disclosed. All interviews were conducted in Chinese, in Beijing, relying on unstructured questions to solicit general knowledge and opinion. All interviews were transcribed in Chinese and then translated into English for coding and analysis.

Following the face-to-face interviews, a wide-ranging questionnaire survey was distributed to a larger sample of 35 Chinese contractors known to have operations in Africa. The Chinese contractor population 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 ranked by their 2005 revenues [Engineering News-Record (ENR) 2006]. In addition, the first writer has developed a dedicated database for research purposes. The two lists combined are believed to cover approximately 90–100% of the population of large-scale Chinese contractors. An official at CHINCA was asked to go down this list with a pencil, and to mark all of the players in Africa that have been most active in recent years. Ultimately, a list of 35 contractors was identified.

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.

Survey instruments were then faxed to the sampled contractors. All the 35 Chinese contractors responded to the questionnaire survey (see Table 1). Twenty-three out of the 35 Chinese contractors were listed in the ENR 2006 top international contractors and had total revenues of U.S.$ 67.7 million. Noticeably, only 6 of 35 firms are headquartered in western and central regions of China, while the remaining ones are based in Beijing or eastern coastal municipalities and provinces such as Shanghai.

All the Chinese construction firms that responded to the survey have had operations in Africa in the past 6 years and many of them view business in Africa as highly strategic. Fig. 3 shows the geographic distribution of Chinese construction firms. The countries with the highest number of active Chinese contractors in sub-Saharan Africa are Angola and Nigeria (10), Botswana (9), Congo (8), and Equatorial Guinea, Ethiopia, Ghana, South Africa, and Uganda (7). In North Africa, 13 Chinese contractors operate in Algeria and 12 in Sudan. On average, a typical Chinese construction firms is present in slightly more than five sub-Saharan countries and in more than one North African country.

This paper reports findings that center on the market entry strategies of Chinese contractors into the African construction market. This paper does not report their practices and lessons learned through local operations in Africa, which are topics that will be addressed in another paper.

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Table 1. Particulars of Surveyed Chinese Contractors

Details of surveyed Chinese contractors	Number	% of total
By international revenue (million U.S.$)[a]		
≤50	7	20.0
50–100	4	11.4
100–500	8	22.9
≥500	4	11.4
By global revenue (million U.S.$)[a]		
≤100	5	14.3
100–500	7	20.0
500–1000	5	14.3
≥1,000	6	17.1
By ENR ranking (Top 225 international contractors)[a]		
Top 100	8	22.9
Top 101–150	4	11.4
Top 151–225	11	31.4
By location of headquarters		
Beijing	17	48.6
Shanghai	5	14.3
Other cities	13	37.1
By ownership		
State owned	35	100.0
Private	0	0.0

[a]There are 12 surveyed contractors not listed in ENR's top 225 international construction firms. Data source: *Engineering News-Record* (ENR) (2006).

Government's Roles in Chinese Contractors' Entry into Africa

National Strategy of "Going Out"

The national "going out" strategy encourages and supports Chinese enterprises to invest overseas in order to promote exports or the development of resources, while attracting and using foreign investment into China. According to Zang (2001), this approach allows the "use of the two markets and the two types of resources" and makes it possible for the going out strategy to supplement the existing "bringing in" policy. The strategy was formally launched in a report to the 16th National Congress of the Communist Party of China (CPC) on Nov. 8, 2002 (People's Daily 2002). The going out strategy is a far reaching national strategy that fundamentally influences every facet of the Chinese economy, including exports of goods and services, foreign investment, labor exports, international financing, and technological cooperation (i.e., cooperative R&D). The construction industry plays an important part in this process because it triggers opportunities for exports of goods and services and for resource extraction activities. The MOFCOMM takes the construction industry as a central element of the going out strategy and encourages construction firms to invest abroad by: (1) developing a policy structure to support international construction; (2) establishing and strengthening a financing system to support international construction; and (3) improving the size and competency of Chinese firms by means of preferential policies to encourage them to enter the markets of developed countries (Wang 2004). The implementation of the going out strategy coincides with the increasing revenue volume of Chinese contractors in Africa (see Fig. 3), confirming the significant driving impact of this Chinese national strategy upon Chinese contractors' entry into Africa.

Institutional Settings Relevant to Accessing the African Construction Market

To implement the national going out strategy, state owned and private contractors are encouraged to pursue overseas projects. Furthermore, institutional arrangements supporting organizations are established to assist Chinese contractors' overseas expansion in a healthy and sustainable manner. The field of players that are involved together with their relationships are depicted in Fig. 4. These organizations and the role that they play in facilitating Chinese contractors' entry into Africa are introduced next.

Department of Foreign Economic Cooperation, Ministry of Commerce

The primary responsibility of the Department of Foreign Economic Cooperation is to organize and control the going out strategy. This involves directing and managing foreign investment, research and development pertaining to offshore goods, offshore resource development, international contracting and labor services, services exports, and other tasks related to foreign economic cooperation. The international contracting division of the department has responsibilities including policy making and the administration of outbound contracting and monitoring of major projects. Each staff person of the division is responsible for monitoring a different geographical region.

Economic and Commercial Counselor's Office

The economic and commercial counselor's office is an integral part of each Chinese embassy in the various African countries and an important support mechanism for Chinese contractor entrants. This office, which represents the MOFCOMM, has as its primary responsibilities to "control and coordinate" the business activities of Chinese enterprises in the host country. The business office is responsible for activities such as undertaking surveys of the host country and following up on ongoing projects. The counselor's office stands at the forefront of Chinese economic and commercial dealings with the host country, taking responsibility for such issues as traffic accidents, security, robberies, and the like.

China International Contractors Association

Founded in 1988 as a nationwide chamber of commerce for international contractors, CHINCA is a nonprofit organization with corporate status, approved by the MOFCOMM. CHINCA has more than 1,000 member contractors engaged in international contracting, manpower services, and other international economic and technical cooperation activities. The association is a member of the International Chamber of Commerce, China State Commission. CHINCA's missions are: (1) to act as a bridge between government and enterprises; (2) to coordinate, guide, consult, and serve enterprises in the industry; (3) to protect fair competition and maintain normal business order; and (4) to safeguard state interests, protect the legitimate rights and interests of its members, and promote international project contracting, manpower exchange services, and other international economic technical cooperation activities (CHINCA 2007).

China Exim Bank

As a state policy bank, the China Exim Bank, which (like any ex-im bank) is devoted primarily to providing export seller's and buyer's credits to support the trade of Chinese goods. These credits reached a total of U.S.$20 billion in 2005, making the China Exim Bank one of the largest export credit agencies worldwide. In addition, the China Exim Bank is the only Chinese institution

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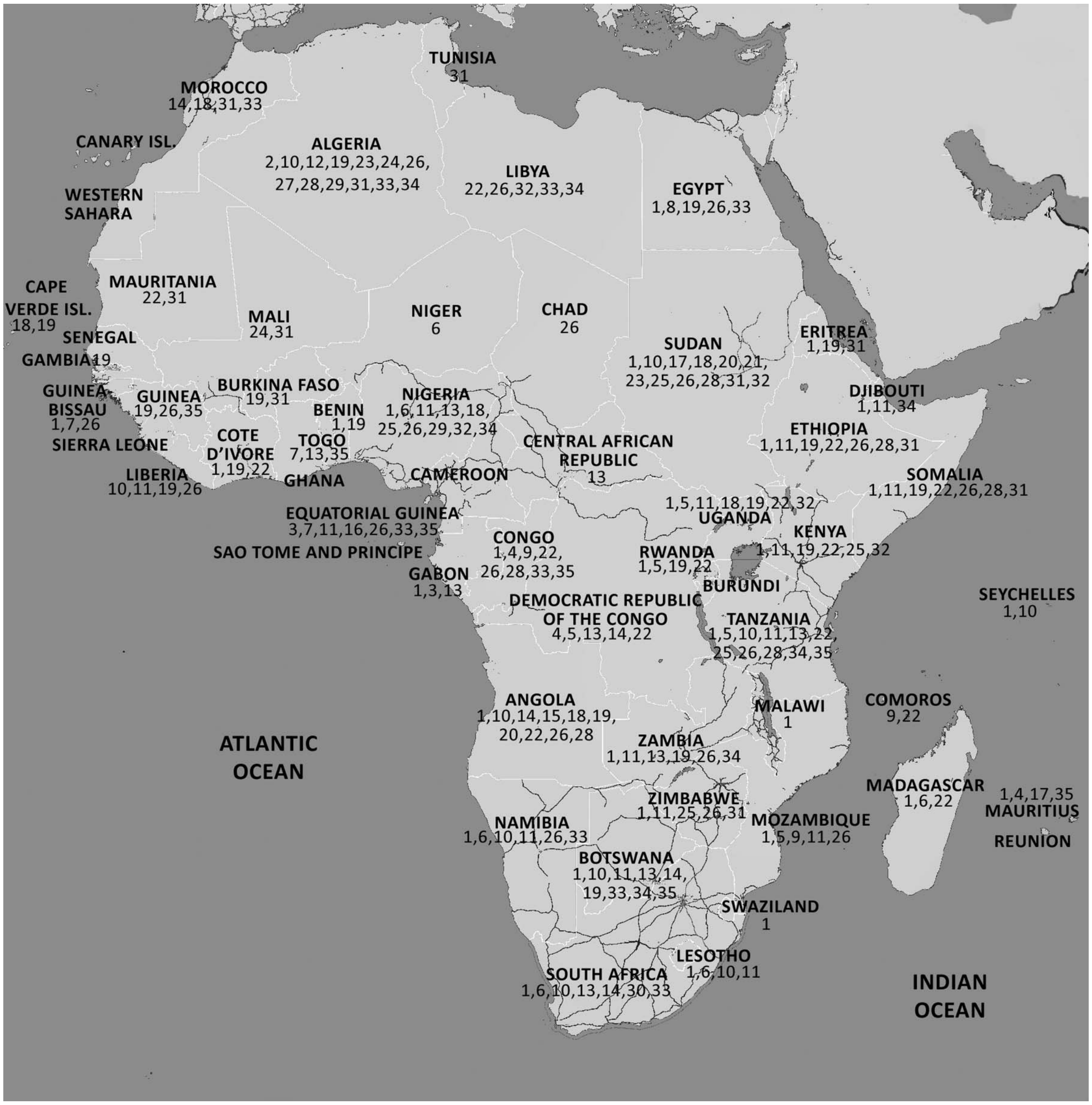

Fig. 3. Geographic distribution of sampled Chinese contractors in Africa (note: the numbers are the codes of the sampled Chinese contractors; map courtesy of http://www.openstreetmap.org)

that is empowered by government to provide concessional, i.e., below market rate, loans to overseas projects. According to the policy of the bank, for both export buyer's credit and concessional loans, no less than 50% of the equipment, materials, technology, or services needed for the project should be procured from China.

Registration, Coordination, and Monitoring Mechanisms

In order to enter a specific African market, Chinese contractors must register and acquire the relevant permits from MOFCOMM (specifically, Department of Foreign Economic Cooperation) to bid on projects. According to government regulations, a contractor has to register at the economic and commercial counselor's office of the Chinese embassy upon initially entering a country. The office approves the application based on local market conditions. After obtaining the acceptance letter from the counselor's office, contractors have to apply for another acceptance letter from CHINCA by submitting the first acceptance letter from the counselor's office. With these two acceptance letters the contractor can bid for projects, typically in one of two ways. For local projects, the bidding contractor needs a bidding permit issued by MOFCOMM; for projects financed through export credits, contractors must obtain prior support of banks and insurance companies and then approach MOFCOMM.

With more and more Chinese contractors entering Africa, and many of them being similar in terms of capacity, size, and experience, competition among themselves in some markets has become fierce. MOFCOMM encourages orderly competition and believes that it is reasonable to expect a balance between government involvement and market-based competition. While MOFCOMM does not restrict the number of Chinese contractors that participate in an overseas market bidding process, it requires that CHINCA take on the responsibility for coordinating the Chinese contractors before bidding commences. The coordination requirement is important because a single project can involve multiple packages of work with different technical characteristics. For example, a water plant project includes equipment supply as well as

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#	Description
1	Organize and control the going out strategy
2	Coordinate, guide, consult and serve Chinese international contractors
3	Control and coordinate the business activities of Chinese contractors in the host country
4	Finance the projects Chinese contractors pursue

Fig. 4. Institutional settings for implementing the "going out" national strategy

civil works for building the dam. Thus, several firms can bid on different aspects of the project, each firm bidding for the portion of the overall job in which it is specialized. According to the internationally recognized practices, the firms working on the various aspects of the project should establish a communication system among themselves. Cooperation among Chinese contractors performing different parts of projects has not been a problem.

Ensuring fairness in the coordination process is by no means an easy job. As one respondent commented

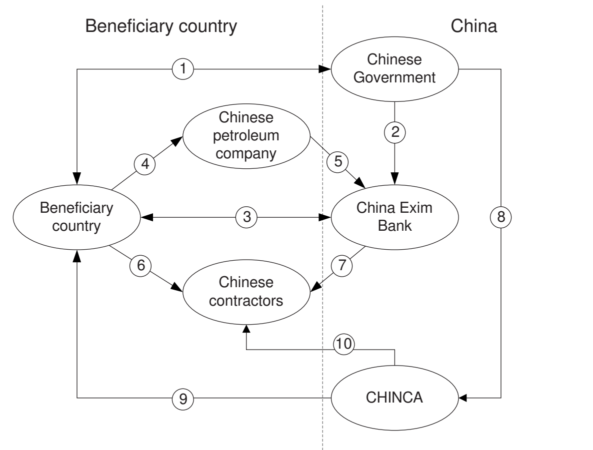
> "It's an agreement through discussion and negotiation, but not imposed. If it's imposed, then it won't be popular and participants will not buy into the project. This will have a negative impact and violate the principle of fair competition. The goal of these coordination efforts is to prevent a price war among the firms that would undermine the well-being of our country. With that said, fair competition is still very important. Our country's message to the world is that we will operate in the market economy, or more accurately, in the market economy within the socialist context. We need to compete within the framework of socialism. Competition is meant to bring out the best in us. You can't just come in and suppress this kind of competition simply because we are now going overseas."

Some of the coordination measures are very formalized. For example, if there are several Chinese companies interested in the same project, the engineering department of the economic and commercial counselor's office will issue the bidding permit (or the letter of government support) to the company that entered the local market first. Once the counselor's office issues the letter of government support to one company, other companies are not allowed to pursue this project anymore. This so-called early bird system has been a point of contention for many Chinese contractors, as echoed by another respondent, "*The company that registers first gets the project. Thus, it depends on who has the most up-to-date information. Although water pipelines are our strength, we missed the opportunity to participate in a water pipeline project in Algeria due to late registration*."

Most of our respondents felt that the current coordination mechanism is not always as effective as it could be. One respondent noted that, "*Sometimes it's effective, but sometimes not*." An official at the MOFCOMM acknowledged that "*so far we do not have a coordination mechanism with which everyone agrees*."

Angola Mode

The Angola mode (see Fig. 5) is increasingly being used by MOFCOMM for countries that cannot provide adequate financial guarantees to back their loan commitments. The Angola mode is a barter arrangement whereby African nations pledge natural re-



#	Description	#	Description
1	Enters into a framework agreement	6	Instructs company to construct priority infrastructure projects
2	Nominates as the lender	7	Provides financial loan for project construction
3	Enters into a loan agreement	8	Nominates as the coordination agency
4	Awards company license to extract natural resources	9	Recommends qualified candidate contractors
5	Provides payment in kind for financial loan	10	Coordinates Chinese contractors

Fig. 5. Structure of "Angola mode" for accessing the African construction market

source supplies in return for the provision of infrastructure from Chinese firms. Angola mode deals have three important components: (1) the Chinese government and the African country government sign a special framework agreement outlining the principles for cooperation; (2) petroleum companies and banks then sign corresponding cooperative agreements (when first used in Angola, the Angolan government signed petroleum exploration agreements with two oil companies and a longer loan agreement with the China Exim Bank); and (3) CHINCA then recommends the contractors to the African country. The criteria for recommendation include the characteristics of the project, and the expertise and financial soundness of the contractors. CHINCA will supply a list of recommended contractors and the African government will organize limited bidding based on this list to select a winner. Infrastructure projects are identified through bilateral negotiations at a governmental level. Sometimes the African government will propose a specific infrastructure project and MOFCOMM will confirm it. Other times Chinese parties will make a proposal. Nevertheless, project identification in this arrangement is basically out of the control of Chinese contractors.

The organization of the deal is relatively complex owing to the need to coordinate with multiple Chinese firms involved, each of which must carry out its own due diligence. The arrangement allows countries with abundant resources but limited creditworthiness to package the exploitation of natural resources with the development of infrastructure assets. Through the Angola mode, contractors can enter countries where the local governments have very limited budget for infrastructure development, relying on payments brokered through China Exim Bank but derived from Chinese oil and resource companies.

Chinese Contractors' Perspective of Africa

Go/No-Go: Opportunities and Threats in Africa

There are many reasons why a Chinese construction firm would consider entering the African market. In addition to the general

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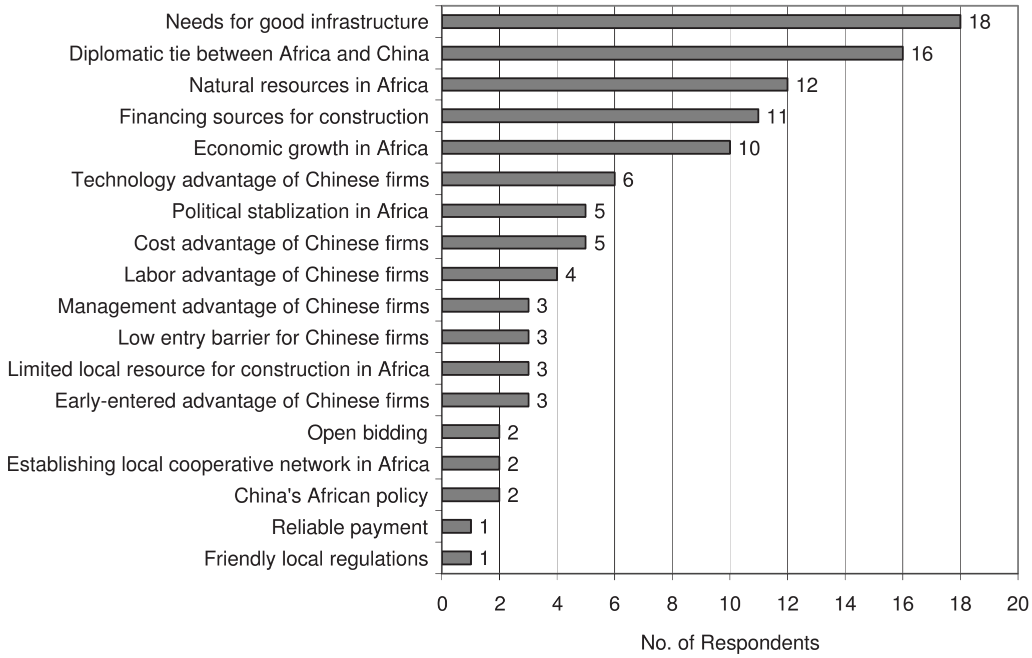

Fig. 6. Opportunities identified by Chinese construction firms in Africa

issues that motivate other international contractors, Chinese contractors are driven by some unique factors, including government encouragement and certain conditions in the domestic construction market. One respondent described this as follows, "*usually the profit margin in Africa is higher than in China. In a lot of the domestic projects, the payments we receive from our clients lag significantly behind our expenses. However, foreign projects often pay ten to twenty-some percent above expenses. This is very good for our cash flow*."

Through the survey, Chinese contractors were asked to list what they considered to be the top three opportunities for their future operations in Africa. Fig. 6 shows the frequency of the opportunities that were identified.

The top five opportunities that were recognized combine to form a larger theme or story: Africa is growing rapidly and is in dire need of better infrastructure, meanwhile China requires natural resources that Africa has in abundant quantities, and Sino-African political relations are sound and conducive to mutually beneficial business pursuits.

At a more microlevel, Chinese construction firms believe that they have several comparative advantages in Africa. It is interesting to see that the technology advantage, cost advantage, labor advantage, management advantages, and early entry advantage of Chinese firms are all notes as major sources of opportunity (6, 5, 4, 3, 3, and 3 out of 35, respectively). It is also striking to note that only two respondents noted China's official African policy as a source of opportunity. The Chinese contractors were also asked to list the top three threats that face regarding the African market and the results are shown in Fig. 7.

The largest threat to investing in Africa is the political stability of the nations of the continent. One respondent commented, "*the threats are mainly rebellions and [racial] conflicts. Basically, as long as the nation is stable, there are few problems…We have withdrawn from many markets, like Rwanda, where the situation was very good until the tribal conflicts took place.*" Other threats include security concerns as well as the incidence of certain diseases that are absent or uncommon in China, such as AIDS, malaria, cholera, and typhus. However, respondents believe that as long as they educate their workers regarding these risks, they can be avoided through prevention.

The risk of competition from other Chinese contractors is larger (and more feared) than that stemming from other international or local construction firms. One respondent had the following point of view, "*Western companies mainly participate in investment programs. In that sense, there is little direct competition between the Chinese companies and those from the West. Our main competitors are other Chinese companies. Some of the more mature local companies, such as those from Mauritius, are also our competitors*."

Collection of payments from clients is also a serious issue, especially when projects are host government funded and can be impacted by political instability. The experience of one respondent, whose organization now does not bid for projects funded by host governments, is representative: "*if the host government funded the project, the date of payment will be unreliable. For example, in a two year project, once the ruling party changes, the new government may not admit the contract signed by the previous government. In fact, we had this kind of experience and could not get any money after the construction work had been done.*"

Assessing the Impacts of the Identified Opportunities and Threats

Respondents were asked to list the number of projects they undertake in Africa on an annual basis. Unfortunately, the quality of responses to the question was poor. Almost one-half of the respondents with African operations (15 out of 33) did not provide the data; among the remaining 18 Chinese contractors, three reported very high figures (more than 100 projects) and the remainder reported very low numbers (fewer than 10 projects). A respondent stated in an email that "*it's hard to talk about the number of projects because of the setup of CSCEC, which includes an independent subsidiary with its own decision-making process. Although we have their statistics, they are not very de-*

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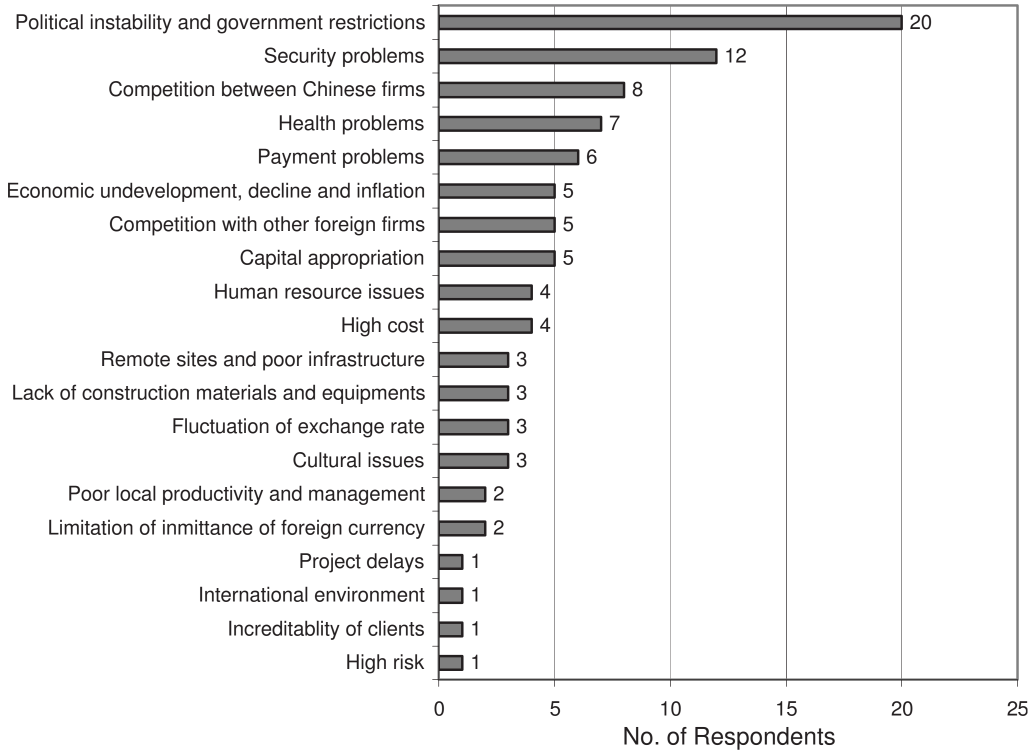

Fig. 7. Threats identified by Chinese construction firms in Africa

tailed. Revenues have been growing steadily over the last few years."

In order to assess more broadly the relationship between perceived opportunities and threats, and their impact on market entry performance, we have analyzed existing data sets from MOFCOMM and data sources from other well-known international institutions centering on 51 African countries to assess the impacts of more frequently cited opportunities (top five) and threats (top two). Unfortunately, no suitable variable has been found to measure the political instability of different African countries. These opportunities and threats are measured with variables, as introduced in Table 2.

The variable used to assess entry performance is total architecture, engineering, construction, and labor (AECL) revenue of all Chinese firms in the respective African countries. Potentially better measures such as earnings before interest and tax (EBIT) are not publicly available. The information about AECL revenue is reported by MOFCOMM in their annual year book. Economic freedom and business starting cost are used as control variables in the analysis. Most data included were collected in the year 2005. The correlation matrix of the independent and dependent variables is shown in Table 3. All correlations coefficients are below 0.5; multicollinearity does not appear to be a problem. The results of a simple OLS regression analysis are depicted in Table 4.

The analysis shows that the revenue of Chinese construction businesses in various African countries is associated at a significant level with construction capital availability, oil reserves, Chinese foreign direct investment (FDI), and World Bank lending. Security issues, infrastructure needs, diplomatic ties, and business environment (measured by economic freedom and business starting cost) do not appear to be as strongly correlated. The traditional business development principle of following global capital movements persists in the case of Chinese contractors' entry into Africa.

The analysis also indicates that no matter how attractive or unattractive the perceived opportunities and threats are, the entry of Chinese contractors into a given local market depends to a very significant extent on the availability of capital to fund construction, which can take the form of cash, or with the innovative Angola mode arrangement, natural resources that are bartered for construction services through higher level intergovernmental arrangements.

Market Entry Mode Selection

A market entry mode is an institutional arrangement that makes possible the entry of a company's services, technology, human skills, management, or other resources into a foreign country (Root 1987). This is a critical decision for international construction firms because selection of an inappropriate entry mode can lead to significant negative consequences. Chen and Messner, 2009 defined a taxonomy of 10 entry modes for international construction markets consisting of (1) strategic alliance; (2) local agent; (3) licensing; (4) joint venture company; (5) sole venture company; (6) branch office/company; (7) representative office; (8) joint venture project; (9) sole venture project; and (10) build operate transfer/equity project. As can be seen from the survey, Chinese constructions firms have used all these basic entry modes when entering African markets (see Fig. 8).

However, as a preferred mode of entry into African markets, Chinese contractors typically opt for establishing representative offices or branches (13 instances of each). In addition, Chinese contractors have increasingly used the localized sole venture company. Project joint ventures do not appear to be as popular among Chinese entrants as they are in other markets around the world. Chinese companies report that local firms do not have the

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Table 2. Description of Variables and Sources

Opportunities or threats	Measurement variable	Source	Description
Security problems (T2)	Fatality	MIPT terrorism knowledge base (2006)	Terrorist acts by country from 2000 to 2006 per capita
	Injury	MIPT terrorism knowledge base (2006)	Terrorist incidents by country from 1968 to 2006 per capita
Natural resources in Africa (O3) and financing sources for construction (O4)	Oil reserve	CIA world factbook (2005)	The total amount of petroleum (oil) discovered in any given oil field or nation (in millions of barrels). Because the exact amount can never be known, the term proven reserve or PR refers to an amount of oil that is generally accepted by geologists to be
Needs for good infrastructure (O1) and economic growth in Africa (O5)	GDP	World Development Indicators database (2005)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products
	GDP growth	CIA world factbook (2005)	GDP growth on an annual basis adjusted for inflation and expressed as a percent
Financing sources for construction (O4)	Chinese FDI	MOFCOMM (2006)	Chinese foreign direct investment in respective African country
Financing sources for construction (O4)	World Bank lending	World Bank (2006)	Both IDA and IBRD loans
Diplomatic tie between Africa and China (O2)	Diplomatic tie	MOFCOMM (2006)	Number of years since diplomatic tie was established
Control variable	Business starting cost	World Development Indicators database (2005)	Cost to register a business is normalized by presenting it as a percentage of gross national income (GNI) per capita
Control variable	Economic freedom	The Heritage Foundation (2006)	The index is based on highly culturally contingent factors. This data makes a number of assumptions about "freedom" and the role of the government that are not accepted by much of the world's population
Entry performance	AECL revenue	MOFCOMM (2006)	The total revenue of Chinese firms in architecture, engineering, construction. and labor business in respective African country

Note: T2 means the top 2 threat and O1 means the top 1 opportunity.

technical or managerial expertise to make joint ventures worthwhile. The few joint ventures that were reported involved cooperation between Chinese contractors in order to minimize competition among themselves. It seems that BOT/equity is not impossible in Africa, although risks must be calculated carefully given the high levels of social, political, and economic turbulence of many African countries. According to one respondent, the Chinese enter the African market differently than Western construction companies, primarily through construction contracting and financing programs launched in recent years.

As can also be seen from Fig. 8, most of the surveyed Chinese contractors prefer those entry modes that are more "permanent" than "mobile" (Chen 2008), indicating that Chinese contractors are not in the game of "hit-and-run" but that they have a long

Table 3. Correlation Matrix

	AECL revenue	Fatality	Injury	Oil reserve	GDP	GDP growth	Chinese FDI	World Bank lending	Diplomatic tie	Economic freedom	Business starting cost
AECL revenue	1.0000										
Fatality	0.2414	1.0000									
Injury	0.0858	0.1351	1.0000								
Oil reserve	0.4093	0.1881	0.0060	1.0000							
GDP	0.3814	0.1421	0.1236	0.3287	1.0000						
GDP growth	0.2892	0.3896	0.0823	0.3015	0.1148	1.0000					
Chinese FDI	0.7299	0.1022	−0.0257	0.0580	0.1532	0.1798	1.0000				
World Bank lending	0.3395	0.2370	0.2737	0.1891	0.3345	0.0674	0.0094	1.0000			
Diplomatic tie	0.3069	0.1896	0.1850	0.0033	−0.0303	0.1911	0.1700	0.4354	1.0000		
Economic freedom	−0.1366	0.0102	0.1234	−0.1992	0.1746	0.0037	−0.2381	0.2040	0.1034	1.0000	
Business starting cost	−0.0570	0.1791	−0.0722	0.0732	−0.1283	0.4129	−0.0179	−0.1053	0.0718	−0.1859	1.0000
Mean	121.346	21.922	170	2.4×10^{9}	1.8×10^{10}	0.04642	674.64	2034.2	31.059	1.37157	1.189
Standard deviation	35.8849	10.488	103.593	1.2×10^{9}	5.5×10^{9}	0.00507	409.301	328.672	1.7389	0.10843	0.2257

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Table 4. Regression Analysis

Variables	Coefficients	Standard error
Intercept	−66.446	67.004
Fatality	0.112	0.296
Injury	0.002	0.028
Oil reserve	8.77×10^{-9} [a]	2.82×10^{-9}
GDP	7.26×10^{-10}	5.99×10^{-10}
GDP growth	393.897	693.141
Chinese FDI	0.058[b]	0.008
World Bank lending	0.019[c]	0.011
Diplomatic tie	2.226	1.908
Economic freedom	−1.278	29.540
Business starting cost	−11.108	14.225
Multiple *R*	87.317%	
R square	76.243%	
Adjusted *R* square	70.303%	
Standard error	139.653	
Observations	51	

[a]Significance level at 1%.
[b]Significance level at 5%.
[c]Significance level at 10%.

term strategic view for the African construction market and would like to align large corporate resources for developing local business there.

Conclusions

Africa is a traditional overseas market for Chinese contractors and the launch of the national going out strategy promotes more and more state owned and private Chinese contractors to enter the African market. In 2005, Chinese contractors had 32% of their total international revenue coming from Africa. To implement the going out strategy, institutional setting are established or enhanced to facilitate Chinese contractors' overseas expansion, involving MOFCOMM; economic and commercial counselor's offices in various African countries, CHINCA, and China Exim Bank. This set of organizations is involved in various market entry permits, coordination of competition, and arrangement of financing. An innovative approach dubbed the Angola mode, which involves the participation of these organizations together with petroleum and construction companies, has evolved as a way for contractors to enter countries where local governments, although rich in oil, have very limited financial capacity for infrastructure development.

To Chinese contractors the top opportunities in Africa include needs for good infrastructure, existence of bilateral diplomatic ties, natural resources in Africa, availability of financing sources for construction (sometimes tied to natural resources), and continued high rates of African economic growth. The top threats to providing construction services in Africa include political instability, security and safety concerns, competition from other Chinese contractors, and payment issues. However, empirical analysis shows that no matter how attractive or unattractive these opportunities and threats may be, ultimately the primary driver for Chinese contractors to enter and expand market share depends upon the availability of capital—either from Chinese or African sources—to pay their invoices.

Regarding how to enter the African market, Chinese contractors typically apply "permanent entry modes" including representative offices, branch offices/companies, and localized sole venture companies. More mobile entry modes such as joint ventures are less popular because local firms do not have the technical or managerial expertise to make joint ventures worthwhile. BOT/equity is used occasionally, despite the high risks. The fact that most of the surveyed Chinese contractors prefer those entry modes that are more permanent indicates that Chinese contractors pursue a long term presence. This finding implies that Chinese contractors are "digging in for the long haul" and will continue to grow in importance as a source of competition for European and indigenous African contractors that have historically dominated the African market.

This study is a first step in a broader effort to decode Chinese contractors and the African architecture, engineering and construction (AEC) and labor markets, and evaluate Chinese construction firms' entry into Africa. Much further research is needed to explore specific answers to critical debates such as the role of

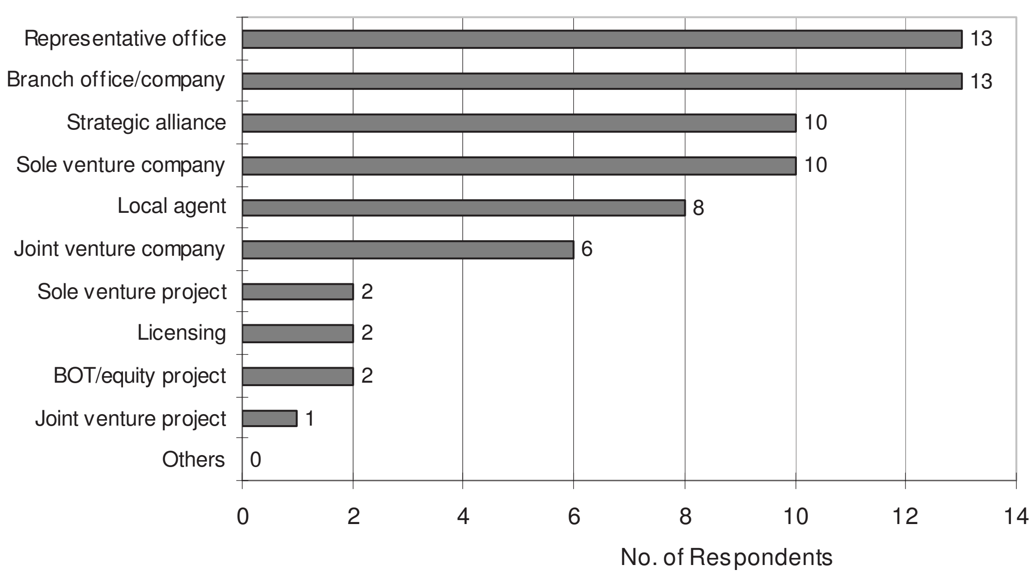

Fig. 8. Market entry modes used by Chinese construction firms for Africa

government-to-government ties, the use of industrywide coordination mechanisms, other innovative arrangements for infrastructure and building development with limited capital, and the impact of national instability upon market entry in Africa. More qualitative research along the lines of recent studies by Orr and Scott (2008) and Mahalingam and Levitt (2007) could be productive to assess the typical institutional conflicts that arise when Chinese entrants confront unfamiliar values, work practices, business conventions, and legal/regulatory institutions. Another productive line of inquiry would be to compare the Angola mode to other forms of cross-border barter arrangements that have been used over the past two or three centuries.

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