IMPACT OF CHINA IN THE INTERNATIONAL CONTEXT OF CONSTRUCTION

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Abstract

This paper provides an overview of the development of the Chinese construction industry in the past 30 years. Statistical data indicates that the construction industry is one of the major economic sectors in China. The growth rate of Chinese construction, both in terms of construction GDP; construction areas; number of construction companies and total profit levels, were particularly high in the last few years. There is also substantial increase to foreign investment in China, as well as an increasing number of Chinese construction companies working overseas. The paper concludes that China is working towards integration with the international construction market as one of its key players.

Keywords: China; Construction; Market; International context

Introduction

China is a huge country with a population of 1.3 billion people, which represents 22% of the total population in the world. In the last 5 years, China's economic growth has remained very strong and its GDP remains at a comparatively high level, from 10 to 12% per annum. Construction, as always, is one of the most important pillars for the economic growth in China.

The purpose of this paper is to highlight the impact of China in the international context of construction. International construction can be defined as construction projects where one company, resident in one country, performs construction works in another country (Mawhinney, 2001).

Development of the construction industry in China can be divided into different stages throughout the past thirty years. There were milestones such: as the announcement of the 'Open Door Policy' by the Chinese government in 1978, the 'Housing Reform Policy' in 1988, and China's entrance into the World Trade Organization (WTO) as a member in 2001, etc.

This paper introduces the Chinese construction industry in the past, follows with the current construction market performance, and ends with the possible ways forward in the future.

China's construction and housing industry in the Past

Before 1979

The People's Republic of China was established in 1949 and since then a planned economy has been adopted. Hence, there has been no private ownership of land and housing. Individual families were allocated housing from their 'units' (factories or enterprises) for which they worked. Construction of housing depends entirely on the availability of public funding and, as a consequence, housing provision has fallen far behind the increasing demand, particularly in urban cities (Wong, Yeung & Howes, 1995).

From 1979 to 1997

Since implementation of Deng Xiao-ping's idea about "marketization" of housing in China in 1980, the socialist in China has implicitly accepted the mechanism of "market" that resulted in many changes to the urban housing system in which home purchase is encouraged. The changes include the sale of state-owned housing, rent-increases, and the participation of private developers in housing construction.

The reform, however, made only little progress. Considerable housing needs and low affordability are two of the major difficulties. The living conditions were far from acceptable with 45% of the housing units throughout China lacking the basic facilities, such as kitchens and lavatories. It is estimated that 3.25 million staff and workers were still living in quarters less than 4 m2 per capita, in 1996. According to an investigation by the Ministry of Construction in the early 1990s, the average price of commodity housing was twelve times the annual income of the middle-income group in Shanghai. On the other hand, the vacancy rate of commodity housing is 9.9%, equivalent to a total area of 50 million square meters (Urban Housing Reform in China - A Review of Welfare Housing Development in Beijing 1987 - 1997).

During the period from 1979 to 1997, up to 15 billion m2 of urban and rural housing was built nation wide. The urban residential floor area per capita got up to 8.8 m2 by the end of 1997 compared with 3.5 m2 in 1978 (Nie, 2008).

From 1998 to 2007

The policy to encourage Urban Housing Reform and to accelerate the pace of housing construction was delivered by the central government by the end of 1998, with the purpose to maintain the development of the national economy through housing investment and consumption. Since then, the allocation of welfare housing has been terminated and replaced with the encouragement of home purchase.

The new housing policy reform can be summarised as: "Force" - the cessation of housing allocation, "Guide" - guidance to housing consumption, "Push" - development of the second-hand housing market, and "Help" - development of housing mortgage facility. The reform has since gradually activated the real estate market.

The average annual housing production was at 800 – 900 million square meters during the period 1987 to 1997 and the number reached 1,230 million square meters in 1998 (Science & Technology Department, 1999). Yet, there is still an immense demand for housing in China. It will

not be able to satisfy the housing demand, both in quality and quantity, with reliance on the traditional methods of construction (Wong, et al, 2001).

China has benefited from an extraordinary economic growth in the last 5 years, 2003 to 2007 with; its GDP growth rate maintained at above 10% throughout this period; and particularly in the secondary industry which includes construction, at a GDP growth rate of 13% in 2006. China's GDP in 2007 was at about 25 trillion RMB (refer to Table 1).

Table 1. China's GDP and growth rates 1998-2007

YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
GDP (RMB 100 million)	84402.3	89677.1	99214.6	109655.2	120332.7	135822.8	159878.3	183084.8	210871.0	249530.6
Growth Rate	7.8%	7.6%	8.4%	8.3%	9.1%	10.0%	10.1%	10.40%	11.10%	11.90%
Primary Industry Growth	3.5%	2.8%	2.4%	2.8%	2.9%	2.5%	6.3%	5.2%	5.0%	—
Secondary Industry Growth	8.9%	8.1%	9.4%	8.4%	9.8%	12.7%	11.1%	11.7%	13.0%	—
Tertiary Industry Growth	8.4%	9.3%	9.7%	10.3%	10.4%	9.5%	10.1%	10.5%	10.8%	—
Per Capita GDP (RMB/person)	6796	7159	7858	8622	9398	10542	12336	14103	16084	18868

- GDP was calculated by using the nominal dollar value (RMB)
- Current exchange value between US dollar and RMB is 1 : 6.8522

Source: China Statistical Yearbook (From 1999 to 2007)

The Chinese economy has enjoyed continuous growth in the past years as indicated in Figure 1. Per capita GDP was increased from about 7,000 RMB in 1998 to about 19,000 RMB in 2007.

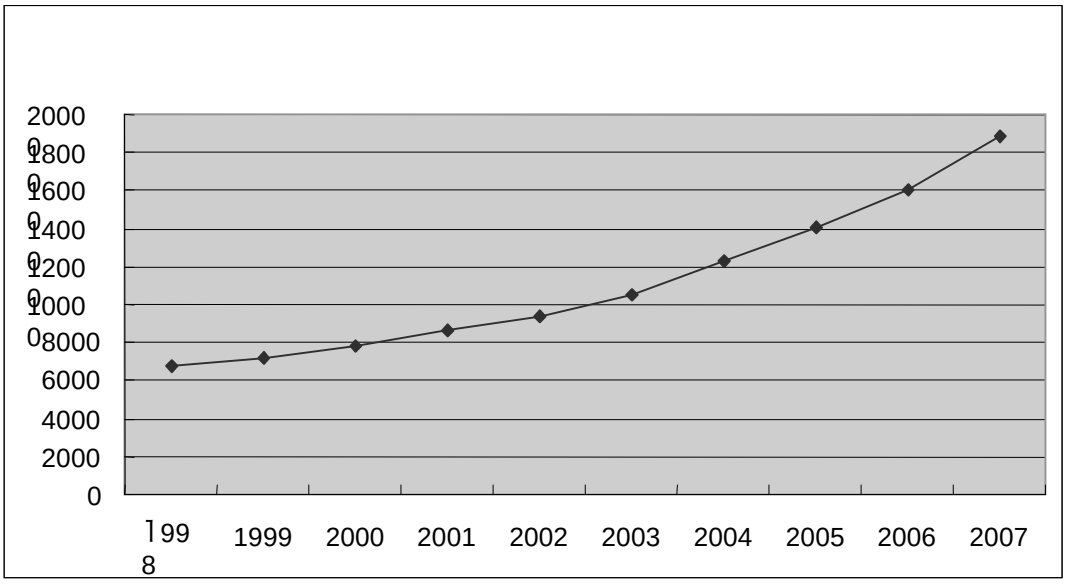

Fig. 1. Per Capita GDP of China from 1998 to 2007

Contribution of the construction GDP to the overall national economy maintained an average level of 5.5% in the last few years. The value of construction GDP was 1,185 billion RMB in 2006 (refer to Table 2).

Table 2. GDP of China's construction industry

YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Construction GDP (100 million)	4621.6	4985.8	5172.1	5522.3	5931.7	6465.5	7490.8	8694.3	10133.8	11851.1
Growth Rate of Construction GDP	2.6%	9.0%	4.3%	5.7%	6.8%	8.8%	12.1%	8.1%	12.6%	13.7%
Contribution of Construction GDP to economy	5.9%	5.9%	5.8%	5.6%	5.4%	5.4%	5.5%	5.4%	5.5%	5.6%
Construction Gross Output Value (100 million)	9126.5	10062.0	11152.9	12497.6	15361.6	18527.2	23083.9	29021.5	34552.1	41557.2
Growth Rate of Construction Gross Output Value	10.19%	10.25%	10.84%	12.06%	22.91%	20.61%	24.59%	25.70%	19.10%	20.30%
Value Added of Construction (100 million)	2540.5	2783.8	3022.3	3341.1	4023.6	4698.3	4654.7	5665.9	6899.71	8116.39

Source: China Statistical Yearbook (From 1998 to 2007)

The growth rate of construction GDP was in an upward trend with gradual growth from 5% in 1997, to 14% in 2006, as shown in Figure 2. The growth rate of construction Gross Output Value within the same period had enjoyed a similar increase, from 10% in 1997 to above 20% in 2006.

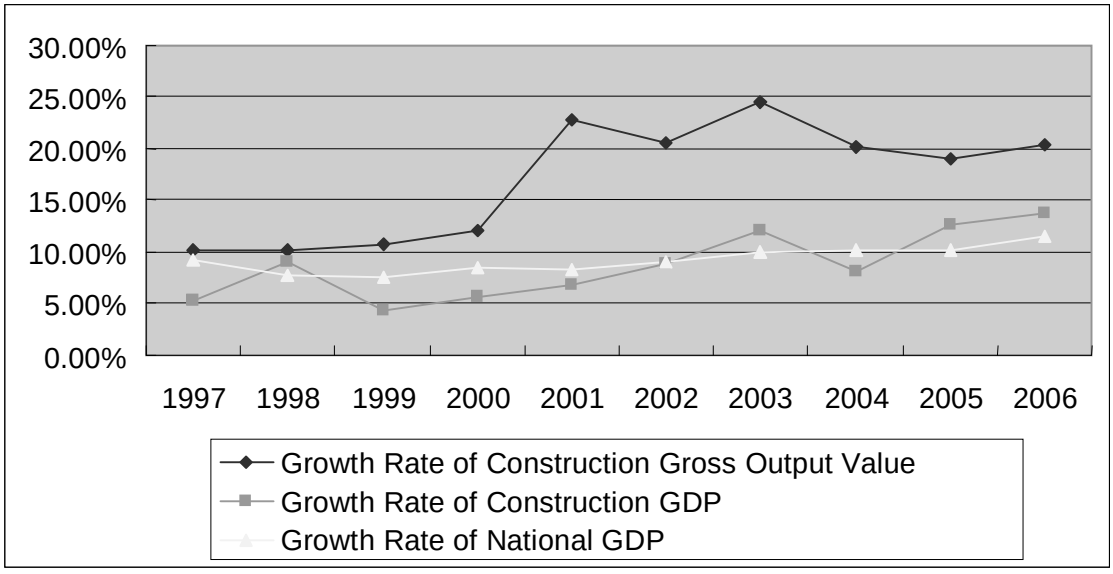

Fig. 2. The growth rate of national GDP, construction GDP, and the construction Gross Output Value (GOV)

Concerning the investment in housing, a total area of 1,900 million m2 of works were completed, with another 4,800 million m2 of works in progress in 2007, as compared to 750 million m2 of completed works and 1,300 million m2 works in progress in 1998 (refer to Figure 3). In the first half year of 2008, the total area of housing construction was at 3,695 million m2, a year-on-year increase of 20.1% (National Bureau of Statistics of China, 2008).

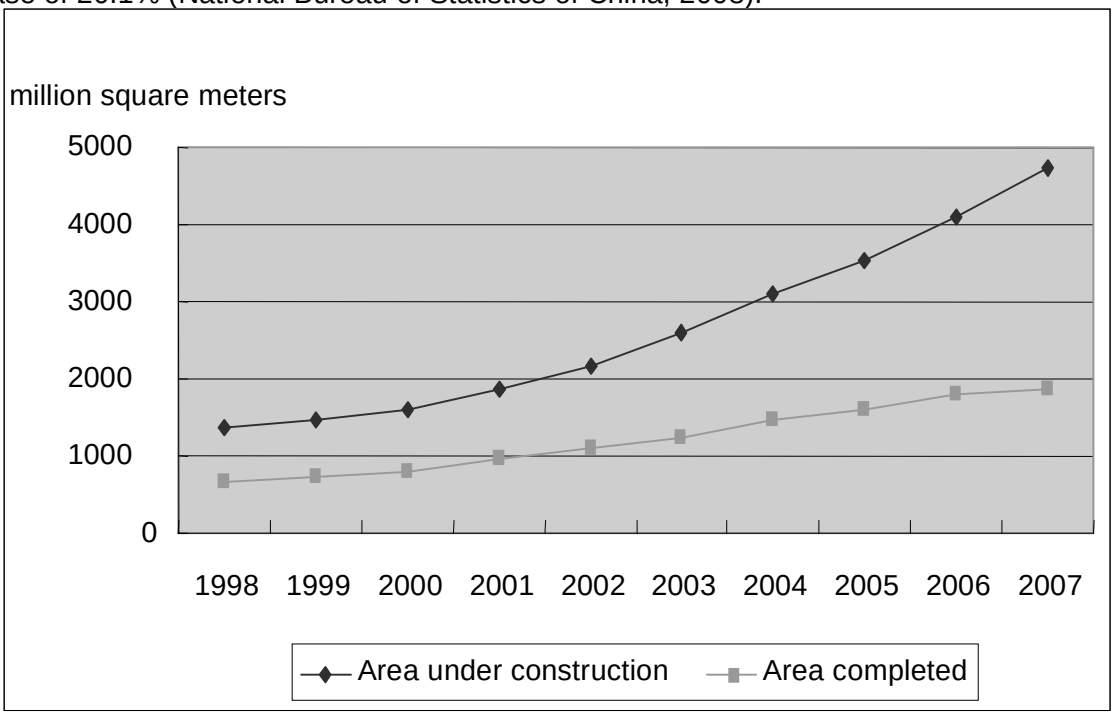

Fig. 3. Construction areas - housing

The growth in size of the construction market in China can be reflected by the increase in number of registered construction companies in the country. As observed in Figure 4, there were about 44,000 registered construction companies in China in 1997 but in 2006, the number was increased to above 60,000, an increase of 36% in 10 years (China Statistical Yearbook, 1998 to 2007).

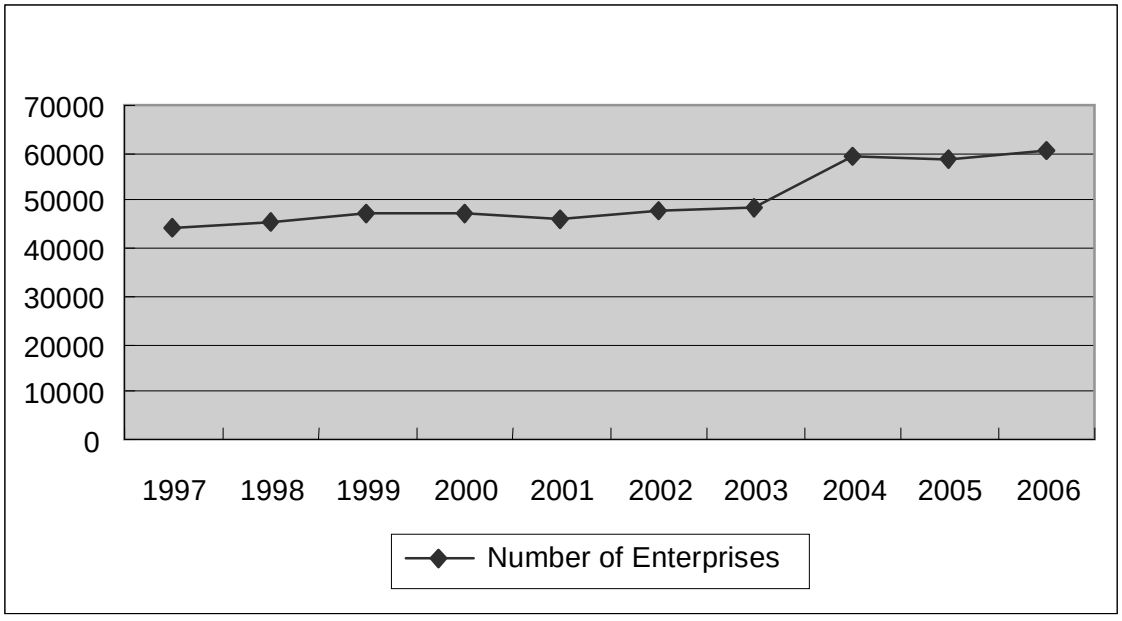

Fig. 4. Rate of development of Chinese construction companies

Another performance indicator for the construction companies in the China market is the increase in their profits. Figure 5 indicated the total profits of Chinese construction companies where 20 billion RMB in 2000, which increased to 120 billion RMB in 2006. That represented an increase of 500% in total profits in 6 years (China Statistical Yearbook, 1998 to 2007).

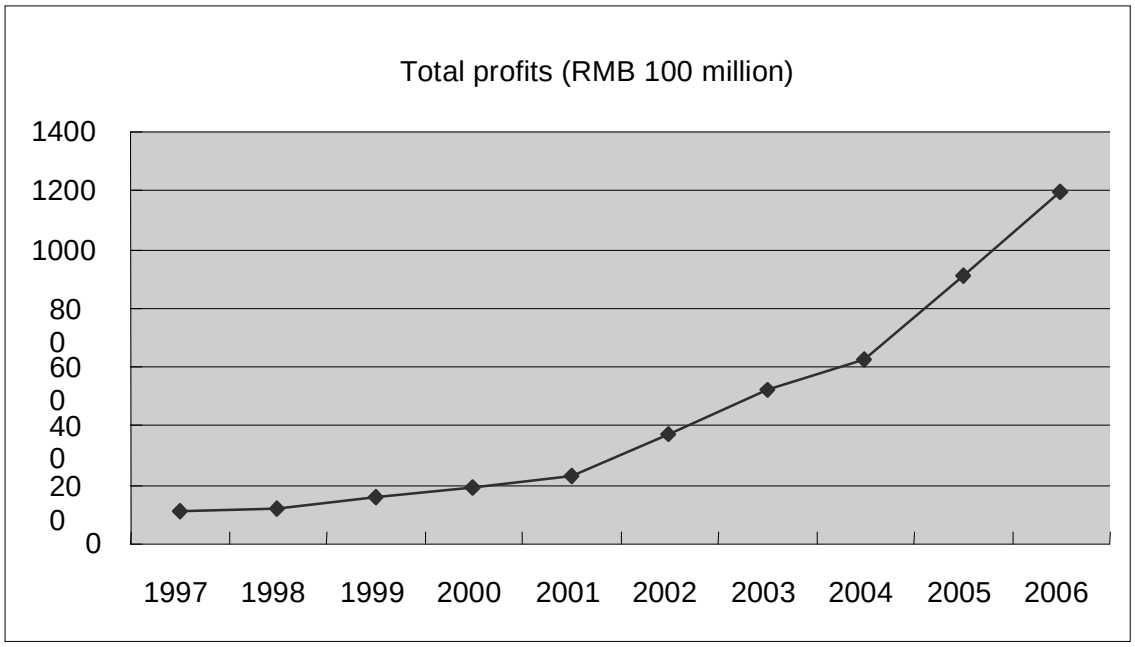

Fig. 5. Development of Chinese construction companies (Total Profits)

The recent development of the local construction market has attracted a number of foreign investments in China. As shown in Figure 6, the total amount of foreign investment had maintained at a relatively stable condition in a 5 year period from 1997 to 2001. However, there was a clear sign of rapid increase in foreign investment in terms of Gross Output Value in the following 5 year period, from 9 billion RMB in 2002 to above 27 billion RMB in 2006. This signifies that more foreign investors and companies are looking for investment opportunities in the newly opened market in China (China Statistical Yearbook, 1998 to 2007).

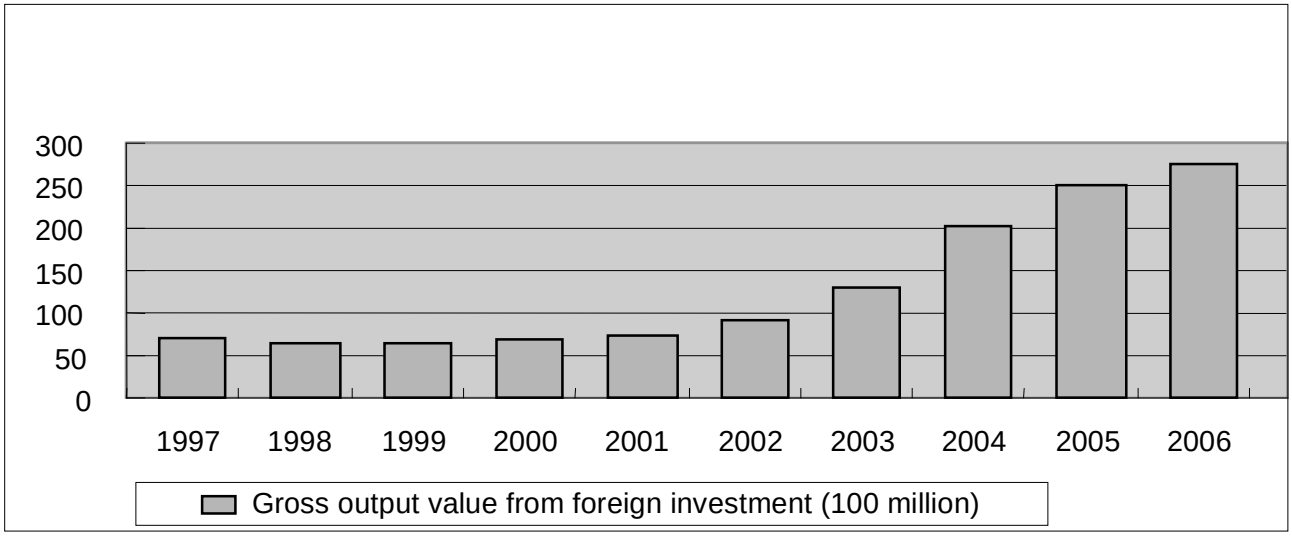

Fig. 6. Gross output value from foreign investment

The investment for construction and installation of fixed asset was 6,677 billion RMB, which equalled to 60.7% of the 11,000 billion RMB total investments, in 2006. The growth rate of investment for construction and installation of fixed assets was an average of 25.8%, from 2003 to 2006, and remains at a very high level.

Table 3. Fixed asset investment 1997-2006

YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total Investment (100 million Yuan)	24941.1	28406.2	29854.7	32917.7	37213.5	43499.9	55566.6	70477.4	88773.6	109998.2
Growth Rate	8.9%	13.9%	5.1%	10.3%	13.0%	16.9%	27.7%	26.6%	26.0%	23.9%
Investment for construction and installation (100 million Yuan)	15614	17874.5	18795.9	20536.3	22954.9	26578.9	33447.2	42803.6	53382.6	66775.8
Growth Rate	3.3%	14.4%	5.2%	9.2%	11.8%	15.8%	25.8%	27.9%	24.7%	25.1%
Percentage of Investment construction and installation fixed asset investment	62.6%	62.9%	63.0%	62.4%	61.7%	61.1%	60.2%	60.7%	60.1%	60.7%

Source: China Statistical Yearbook (From 1998 to 2007) and Lu (2006)

As shown in Table 4, the industry and construction (i.e. the secondary industry) has the biggest share in the composition of the national GDP, at 48.9% in year 2006.

Table 4. Composition of the GDP in term of different economic sectors

YEAR	1985	1990	1995	2000	2005	2006
Agriculture	28.4%	27.1%	19.9%	15.1%	12.5%	11.7%
Industry & Construction	42.9%	41.3%	47.2%	45.9%	47.5%	48.9%
Tertiary Industry	28.7%	31.6%	32.9%	39.0%	40.0%	39.4%
Gross Domestic Product	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: China Statistical Yearbook (From 1986 to 2007)

There are signs of growing economic co-operation between China's construction enterprises, and foreign investors and organizations. The total contracted value of these joint economic co-operations increased from US$ 13 billion in 1999 to US$ 27.3 billion in 2004, which represented an increase of 110% in 5 years.

Foreign investors are now more willing to participate in the Chinese construction market after China's entry into the WTO in 2001. It is because foreign companies are now better protected by the General Agreement on Tariffs and Trade (GATT), and there is a more level playing field between the local and foreign construction companies.

Table 5. Selected indicators for economic cooperation with foreign countries & territories of China's construction enterprises

Economic Cooperation with Foreign Countries & Territories (USD 100 million)	1999	2000	2001	2002	2003	2004
Contracted Value	130.02	149.43	164.55	178.91	209.3	273.4
- Contracted Projects	101.99	117.19	130.39	150.55	176.67	238.4
- Labor Services	26.32	29.91	33.28	27.52	30.87	35
Value of Business Fulfilled	112.35	113.25	121.39	143.52	172.34	212.2
- Contracted Projects	85.22	83.79	88.99	111.94	138.37	174.7
- Labor Services	26.23	28.13	31.77	30.71	33.09	37.5

Source: Lu (2006)

The construction Gross Output Value of the Chinese construction industry was at 4,156 billion RMB in 2006 and the average growth rate of construction Gross Output Value was 22.1% from 2002 to 2006.

In the first half-year of 2008, all the construction enterprises in China combined achieved a total construction output value of 2,266.5 billion RMB, a year-on-year increase of 24.4% (National Bureau of Statistics of China, 2008).

Table 6. Gross output value of construction industry

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Construction Gross Output Value (RMB100 million)	9126.5	10062.0	11152.9	12497.6	15361.6	18527.2	23083.9	29021.5	34552.1	41557.2
Growth Rate of Construction Gross Output Value	10.19%	10.25%	10.84%	12.06%	22.91%	20.61%	24.59%	25.70%	19.10%	20.30%

Source: China Statistical Yearbook (from 1998 to 2007)

In additional to the opening up of the local construction market in China for foreign construction companies and investors, there are also an increasing number of Chinese construction companies willing and able to secure construction works overseas.

The number of international Chinese construction companies (CICC) increased from 33 in 1999, to 49 in 2006, on the Engineering News-Record (ENR)'s list of top 225 international contractors. According to ENR, China State Construction and Engineering Company (CSCEC) was ranked number 18 in year 2006.

Table. 7. A brief summary of CICCs on the ENR's top 225 international contr**actors**

Year	1999	2000	2001	2002	2003	2004	2005	2006
Number of Chinese Contractors in the Top 225 List	33	35	40	43	47	49	46	49
Construction Revenue of the Chinese Contractors (US$100 million)	60.98	53.84	59.47	71.34	83.32	83.33	100.67	162.89
Percentage of the Construction Revenue in the Total 225 Contractors	5.10%	4.60%	5.60%	6.10%	5.96%	5.30%	5.30%	7.3%
Ranking of the CSCEC	NA	NA	NA	16	17	17	20	18

Source: Engineering News-Record (ENR) (2007; 2006; 2005; 2004; 2003; 2002; 2001; 2000) and Lu (2006)

Table 8 indicates that Chinese construction companies participated in the international market mainly for engineering works (92% in terms of contracted value), with 7% for provision of labour services, and less than 1% for architecture and consultant services.

Table. 8. A brief summary of CICCs in the international market (After China entered WTO)

		2002	2003	2004	2005	2006
Foreign contractual engineering	Value of Business Fulfilled (US$ 100 million)	111.9	138.4	174.7	217.6	300
	Contracted Value (US$ 100 million)	150.6	176.7	238.4	296.1	660
Labor service cooperation	Value of Business Fulfilled (US$ 100 million)	30.7	33.1	37.5	47.9	53.7
	Contracted Value (US$ 100 million)	27.5	30.9	35	42.5	52.3
Foreign architecture and consultant	Value of Business Fulfilled (US$ 100 million)	NA	NA	NA	2.27	3.3
	Contracted Value (US$ 100 million)	NA	NA	NA	3.57	3.3

Source: China Statistical Yearbook (NBS, 2006), MOFCOM website and (Lu, et al., 2008)

A research study on the competitiveness of construction companies in the China construction market identified the following factors which are important for success in competition (Lu, 2008). The top 5 key factors (in priority) included: bidding strategy, competitive strategy, relationship with the government departments, cost management, and sustainable development of human resources.

Table 9. Factors of success for competition in China's construction market

Ranking	Factors	Total Score	Mean	Standard deviation
1	F32 Bidding strategy	416	4.52	0.51
2	F2 An explicit competitive strategy	414	4.50	0.51
3	F26 Relationship with government departments	410	4.46	0.69
4	F39 Cost management	408	4.43	0.54
5	F16 Sustainable development of human resources	408	4.43	0.69
6	F7 Communication and coordination among functional departments	406	4.41	0.62
7	F43 Risk management	406	4.41	0.69
8	F37 Quality management	404	4.39	0.68
9	F1 Strategic awareness and perspective	402	4.37	0.57
10	F48 Site management	398	4.33	0.56
11	F23 Relationship with client or owners	396	4.30	0.51
12	F42 Contract management	396	4.30	0.55
13	F13 Business coverage	396	4.30	0.59
14	F14 Leader's personality and capability	396	4.30	0.63
15	F5 Suitability of organization structure	394	4.28	0.54

Source: (Lu, Shen & Yam, 2008)

Discussion and Conclusions

China is now one of the largest providers of construction materials, with annual output of cement, plate glass, and ceramics ranking the world at number one (China Knowledge Press, 2004). However, the huge output of China's construction materials is mostly at the middle to low quality level. It is the high-end, high quality niche area that foreign construction materials have found their market.

Quite a number of foreign construction material manufacturers, namely, the Salux Group, Owens Corning, and B&Q, etc. have successfully ventured into the Chinese market. The Chinese import data indicate that the Italian and Spanish are very strong foreign suppliers of marble, granite, and tile products; the Japanese, Belgians, and Taiwanese are top suppliers of glass products; and the Japanese and Germans are key providers of sealants (China Knowledge Press, 2004).

Development of China's construction industry can be reflected by the production of cement as one of the most important construction materials. Cement manufacturing is the largest sector in China's construction materials industry. Among China's top 100 construction materials companies in 2003, 59 were cement manufacturers.

About 42% of the cement exports are from the Shandong province. Foreign invested manufacturers contribute 40% of China's total cement export and their products are also sold in the domestic market. South Korea was the largest buyer of Chinese cement in 2005 (People's Daily Online, 2005).

Cement exports amounted to 15.24 million ton in the second half of 2007 and around 8 million ton in the first quarter of 2008. There is a sign of shifting China's cement export from Advanced Industrialized Countries (AICs), to Newly Industrialized Countries (NICs) and Less Developed Countries (LDCs). Export to the EU and USA is falling, while the export to Africa and the Middle East is increasing dramatically. The most staggering rise has taken place in export to United Arab Emirates (UAE) (People's Daily Online, 2005). China exported 1.8 million tons of cement to the EU, 37.8% lower than that in the first quarter of 2006. Cement export to Spain decreases by 45.3%, to 1.33 million ton and accounts for 73.8% of that of EU. Export to USA fell by 13.5% to 0.76 million ton. On the contrary, exports to Africa enjoyed an increase of 64.3% which amounts to 1.85 million ton (http://www.cementchina.net). With the rapid growth of the international construction industry, global demand for cement is expected to increase.

In addition to the export of construction materials, there are now more and more Chinese construction companies securing construction projects overseas. In 2008, the China International Trust and Investment Corporation (CITIC) started the construction of a housing project valued at 3.5 billion US$, in Angola. The project is to develop a modern satellite town, which can houses a population of over 200,000 in a rural area of Angola's capital, Luanda. The project will be completed in 2011 (http://www.chinaview.cn).

Conclusion

This paper has provided an overview of the construction industry in China in an international context.

In 2005, there was a 43% (561 million) urban population and 57% (745 million) rural population in China (http://www.chinatoday.com). The rate of urbanization is expected to increase in future. More house and infrastructure development have to be built in the coming years in order to satisfy the needs induced by urbanization, particularly in the major cities.

To conclude, the Chinese construction industry, as a whole, is developing rapidly and it is in transition from a planned economy to a socialist market economy. Geographically, China is a large country with 9.6 million square kilometres. Its construction industry is too big to be generalized. Construction markets at difference regions and provinces will have different characteristics. It is important for foreign investors to know more about these characteristics before investment to be made.

Key Lessons Learned:

- Construction in China is a huge market with its distinguishing characteristics at regional levels.
- China's construction industry went through rapid transition from a centrally-planned economy to a socialist market economy.
- China's construction industry is working towards increasing integration into the global community.
- International construction is the trend for future development.
- With foreign investors and joint-ventures, the boundary between local and overseas markets are less clear.

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Professor Wong obtained his BSc (Hons) in Building from the Brighton Polytechnic, his MSc in Architecture from the London University, and his PhD from the South Bank University in the United Kingdom. He is a Fellow Member of the Chartered Institute of Building (FCIOB), a Fellow Member of the Hong Kong Institute of Construction Managers (FHKICM), and a Fellow Member of the Hong Kong Institution of Engineers (FHKIE).