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A Comparative Study On Economic Factors Of Construction Industries In Australia And China

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Abstract

The construction sector produces the facilities needed for a large majority of the production of goods and services, in which a sizeable proportion of Gross Domestic Product is generated. Recent trends in the globalisation of construction markets indicate that many countries consider construction industry competitiveness as crucial, and are working to increase construction productivity, in particular where the construction industries play an important role in their economic development. This paper first points out the research importance in international construction. Based on economic analyses of construction industries, a study is then carried out to focus on the economic sizes and benefits of the Chinese construction industry and to compare them with the Australian construction industry. Results derived from such an international construction comparison will assist in the Australian construction communities understanding the construction markets and industries in China and will benefit in international construction participation and cooperation.
1. Introduction

Construction is an important industry and forms a vital part of national economies throughout the world. As well as its own output, the construction industry has a significant impact on the efficiency and productivity of other industries. The construction sector produces the facilities needed for a large majority of the production of goods and services, starting from those needed by other producers and ending with those needed by the ultimate consumers. A sizeable proportion of Gross Domestic Product (GDP) is generated in these facilities (Bon and Crosthwaite 2000). The construction sector also promotes investment through its own activities and generates further investment in the broader economy. Previous research demonstrated that national and regional economic development is highly dependent on the amount and diversity of constructed facilities (Liu and Itoh 1999). Therefore, the construction industry is widely considered as a sector which simulates employment and creates job opportunities.

In Australia, the construction industry also plays an important role in economic development, and has directly contributed approximately between 5-6% to GDP according to the Royal Commission into the Building and Construction Industry (2002b). The construction industry provides both the physical infrastructure that underpins the economy and the built environment that most directly influences the quality of our lives. Some 95% of people work in the built environment and about 90% of Australia’s GDP is generated there (Cebon et al. 1999). The construction industry is a key element in national competitiveness. If Australian construction enterprises better utilise their resources and operate more efficiently worldwide, Australian industry as a whole would be more competitive in international markets (Department of Industry, Tourism and Resources 1999). This research will focus on comparing the economic factors of construction industries in Australia and China after identifying the research importance in international construction in the following section.

2. Research Needs In International Construction

Given the increasing pace of globalisation, there is a need in research to provide updated knowledge to understand the present situation of construction industries in other countries (Howes and Tah 2003). The importance of research in the international construction is identified in the
Construction globalisation refers to the increasing integration of both construction enterprises and economics as international flows of trade, investment and financial capital grow (Najjir et al. 2001, Raftery et al. 1998). With globalisation, individual construction enterprises are no longer competing with a limited number of product or service providers, but with all other enterprises in the world economy (Department of Industry, Tourism and Resources 1998). The competitive position of the Australian construction industry depends on relevant sections of the industry aggressively embracing an export culture in the long term. Strong opportunities exist for increased exports particularly in Asia. Australian contractors already have a strong presence in the Asia-Pacific region. This is either through exporting or establishing offices, strategic alliances, joint ventures and plants. However, with the increase of globalisation, some new features have arisen within the international construction market and have diversified the domestic industries in many countries. In addition, despite the size of the world construction market, there has been only a limited number of studies concerned with world markets in construction (Crosthwaite 2000). It is now timely to carry out a research project to analyse these new features in the world market thoroughly in a cross-cultural construction management framework.

Although Australian construction enterprises have had some significant success in exporting their products and services, Australia cannot consider itself a significant global player in construction. By the mid-1990s, the Asia-Pacific region however accounted for from 80% to 90% of Australia’s building and construction exports (Department of Industry, Tourism and Resources 1999). In addition, the relatively low competitive ability of Australian contractors also shows up in analysis of the world’s top 225 construction firms in 2001, based on revenue derived internationally (Engineering News Record 2002). Australia with only two construction enterprises (No 37 and No 85) in the top 225 has only a marginal presence. Analysing the top 50 contractors, which make about 85 per cent of their total revenue from international operations, the truly international players come from the USA and Japan, from each of which there are 10 construction firms. This highlights the trend for a relatively small number of countries and their construction firms to dominate the international construction market. Australian firms, both firms new to the international
market and established global firms, have to take up strategies aimed at increasing their share of the international construction market.

With the Chinese market open to the world, several regulations have been constituted by the Ministry of Construction for overseas enterprises (Ministry of Construction in China 1994), and the construction sector has also attracted a number of overseas enterprises to engage in undertaking construction projects (National Bureau of Statistics 2001). Several hundred overseas construction enterprises from a number of countries and regions are active in construction and related engineering services. Globalisation of the Chinese construction market is about to restructure the local construction industry, and also provide opportunities and challenges to domestic and international construction enterprises (Liu et al. 2003).

Previously, it seems that Australian construction enterprises have not expressed much interest in the Chinese construction market. Although there are no consolidated data for overseas contractors in the Chinese construction market and their projects undertaken, a statistical survey was made by the Chinese Ministry of Construction in 1999 to investigate the satisfaction of overseas contractors with the mechanics of the Chinese construction market (Zhao 2000). Among 134 enterprises which were undertaking 383 projects, there were no Australian based construction firms. Excepting Hong Kong and Taiwan, constructors from USA, Japan and Italy were the strongest in obtaining projects in the Chinese construction market, and their revenues in 1999 were roughly 18, 15 and 13 billion (in Australian dollars) respectively.

Given the huge demand for new construction projects in China to match China’s economic growth, the construction market provides challenging opportunities for overseas construction enterprises. Therefore understanding the structure and dynamics of the construction industry in China is crucial, particularly the potential changes in the market subsequent to the China’s entry into the World Trade Organization and the rapidly increasing construction demand spurred on by the coming 2008 Beijing Olympic Games and the 2010 Shanghai Expo. By comparing the globalisation of construction markets and industries in Australia and China, this paper will aid Australian contractors at better understanding the construction markets and industries in China and enhancing their competition capabilities in the Chinese construction market.
3. Construction Economic Factors In Australia And China

The construction industry provides sizable employment opportunities and affects overall economic development. The importance of the construction sector is related not only to its role in economic development but also to its size. There are several sources of data that provide an insight into the construction industry in China. Of these, the statistics collected in China by the National Bureau of Statistics (2001) have been analysed in this paper and compared with data of construction industries in Australia. The following subsections will highlight key values, including the numbers of enterprises, the numbers of employees, and turnover values.

3.1 Construction Enterprises in China

In China, a construction enterprise refers to a corporate enterprise engaged in the construction of buildings and structures and in the installation of equipment (National Bureau of Statistics 2001). A corporate construction enterprise should meet the following three requirements: (1) being set up under a relevant legal basis, having its full name, organisation and location registered, and capable of taking civil liabilities; (2) independently possessing and using its assets, undertaking its liabilities, and entitled to sign contracts with other institutions; and (3) making independent accounts of its profits and losses, and capable of compiling its own balance sheet. Furthermore, the details of these requirements differ in each level of a domestic construction enterprise, joint venture construction enterprise, and foreign capital enterprise. Figure 1 shows the changes of numbers of construction enterprises from 1990 to 2000.

According to the sources of investments in establishing enterprises, construction enterprises are classified into four kinds of groups, state-owned construction enterprises, urban collective-owned construction enterprises, rural construction teams, and “other” groups. The construction enterprises classified as “other” started from 1993, and contain the construction companies funded from Hong Kong, Macao, Taiwan and other countries. In 1996, the total number of construction enterprises in China reached a maximum of 108,555. Over these years, rural construction teams are clearly the dominant type of enterprise followed by the urban collective-owned. There is an obvious decreasing trend for the number of
state-owned construction enterprises from 1997 to 2000. But, in these years the number of construction enterprises classified as "other" increased three to four thousand yearly and the total number rose to 15,583 by 2000.

![Graph showing changes in numbers of construction enterprises from 1990 to 2000.](image1)

Fig. 1: Changes of Numbers of Construction Enterprises
(Source: National Bureau of Statistics 2001)

### 3.2 Employees in Construction Industries

Figure 2 shows the changes of numbers of employees in the Chinese construction industry from 1990 to 2000. Similar to the number of construction enterprises, the maximum number of employees in construction industry, around thirty million, was reached in 1996. Since then, the numbers of employees, particularly in the state-owned and urban collective-owned construction enterprises, have been decreasing although the total number of enterprises increased in 1999 and 2000. The increase in demand of employees in the group of construction enterprises named as "other" demonstrates the large diversity of construction enterprises and their employees.
Figure 2 shows the changes of average numbers of employees in each of above-mentioned four types of construction enterprises. There is an obvious decreasing trend for the average numbers of persons employed in state-owned construction enterprises. Such numbers in the urban collective-owned construction enterprises have also been decreasing since 1995, but the employed persons have been increasing year by year in the construction enterprise classified as “other”.

In order to analyse the structure of Australian building and construction industry by firm size, employment, output and other business characteristics, four Construction Industry Surveys have been carried out by the Australian Bureau of Statistics (Royal Commission into the Building and Construction Industry 2002a). The four and most recent survey was for 1996-1997. Based on this detailed survey, among the 194.3 thousand
construction contractors, there are 182.0 (93.67%), 11.1 (5.71%) and 1.2 (0.62%) thousands of operating businesses in which the employment sizes are less than 5, from 5 to 19, and more than 19 respectively. The average employment for building construction, non-building construction, and construction trade services are 2.8, 11.3, and 2.3, respectively. The average number of employees over all enterprises is about 2.5 per enterprise. Compared to the employment sizes in Australian construction enterprises, the construction enterprises in China are very large.

3.3 Turnovers from Construction Industries

Figure 4 shows the changes of turnovers (the gross output values) from all four types of construction enterprises from 1990 to 2000 in China. The gross output value refers to total of construction products completed by construction and installation enterprises during a given year. Except the rural construction teams, the annual gross output values of the other three types of construction enterprises have been increasing in recent years. The total turnovers of all construction enterprises increased in these years, and achieved $1.678\times 10^{12}$ Yuan (about $7.65\times 10^{12}$ dollars) in 2000. In order to keep the original worth of data, the Chinese currency in unit of Yuan is used in this paper, and an American or Australian dollar is about 8.29 or 4.56 Yuan respectively.

![Fig. 4: Changes of Turnovers in Construction Industry (Source: National Bureau of Statistics 2001)](image)

The changes in annual average turnovers for each of four types of construction enterprises are shown in Figure 5. These turnovers continue an increasing trend in all years except for 1996 in which many new construction enterprises began operating. The turnover value of
state-owned construction enterprises is still obviously bigger than the values in the other three types of enterprises, but the increasing rates are lower than these of others in some years. The average value of turnovers by all enterprises was 17.253 million Yuan in 2000 (about 78.67 million dollars).

**Fig. 5: Changes of Average Turnovers per Enterprise**
(Source: National Bureau of Statistics 2001)

Because of the massive size of construction enterprises in China, further study is carried out to compare the turnovers averaged by the number of total employees in each type of construction enterprise as shown in Figure 6 for the period of 1990 to 2000. In all these years, the average turnover from the state-owned construction enterprises is bigger than the values in the other three types of enterprises, but the gaps are not as big as averaged by the numbers of enterprises as shown in Figure 6. Different from the changes shown in Figure 6, the turnovers averaged by employees in the rural construction teams have been bigger than the values in the urban collective-owned construction enterprises since 1994. The average value of turnover per employee in all enterprises is about $61.224 \times 10^3$ Yuan (about $279.18 \times 10^3$ dollars) in 2000.
Fig. 6: Changes of Turnovers per Employee
(Source: National Bureau of Statistics 2001)

In 1997, the total turnover of all construction operating businesses in Australia was 57,898.8 million dollars. The average turnover value per enterprise or per employee is 297,986.6 or 119,600.9 dollars respectively.

3.4 Summary

Table 1 briefly compares the economic sizes and profits of construction sectors in Australia (in 1997) and China (in 2000) by summarizing some findings discussed above.

Table 1: Comparisons of Construction Sectors in Australia and China

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>China</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers of Enterprises</td>
<td>194,300</td>
<td>97,263</td>
<td>2/1</td>
</tr>
<tr>
<td>Numbers</td>
<td>484,100</td>
<td>27,409,000</td>
<td>1/57</td>
</tr>
<tr>
<td>Per Enterprise</td>
<td>2.5</td>
<td>281.8</td>
<td>1/113</td>
</tr>
<tr>
<td>Values of Turnovers ($$)</td>
<td>5.79E+10</td>
<td>3.68E+11</td>
<td>1/6</td>
</tr>
<tr>
<td>Per Enterprise</td>
<td>2.98E+5</td>
<td>3.78E+6</td>
<td>1/13</td>
</tr>
<tr>
<td>Per Person</td>
<td>1.20E+5</td>
<td>1.34E+4</td>
<td>9/1</td>
</tr>
</tbody>
</table>

The ratios roughly represent the relative values between the two numbers shown in the same columns for Australia and China. The average number of persons employed in construction enterprises in China is about 113
times that in Australia. The gross output value per employee in a construction enterprise in China is only about one ninth that of Australia. It should be noted that little of the workforce in a Chinese construction enterprise is casual or part-time or outsourced, while this is frequent in an Australian construction enterprise.

4. Discussion and Conclusion

In this paper, a comparative study was carried out to determine the key characteristics of construction sectors in both Australia and China. Most Chinese construction enterprises are massive, particularly the state-owned enterprises, although their sizes have decreased over the last couple of years. The Chinese construction industry is being developed to contain construction enterprises invested in various manners.

Such an international construction comparison will assist in understanding and will benefit Australian communities in both international construction participation and cooperation. Particularly, this research shows the various differences between Australian and Chinese construction industries. Therefore, this research will provide profitable assistance for the Australian construction communities to match new competitive features in the Chinese construction market subsequent to the China’s entry into the World Trade Organisation and to succeed in the competition of construction projects for the coming 2008 Beijing Olympic Games and 2010 Shanghai Expo.

Acknowledgements

The research was supported by a summer scholarship provided by the School of Architecture and Building, Deakin University.
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Ministry of Construction in China 1994, *Qualification Certifications of the*


