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A comparison of contractors' decision to bid behaviour according to different market environments

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Abstract

Contractors' decision to bid behaviour in public sector contracting is compared in two different construction markets (i.e. Hong Kong and Singapore) according to two extreme market conditions scenarios (i.e. booming and recession) and different number of bidders scenarios (ranging from 4 to 30). Multiple bid/no-bid decisions were collected in two rounds via a designed bidding experiment involving managers of medium to large contractors based in Hong Kong and Singapore. A logit model is developed for modelling the probability of a contractor's decision to bid in response to the two extreme market conditions scenarios. The results show that Hong Kong contractors are more influenced by market conditions in their decision to bid than Singapore contractors and this influence is independent of the intensity of competition. The odds of a decision to bid in Hong Kong are four times higher in recession than in booming times whereas in Singapore this is only two times. Both Hong Kong and Singapore contractors' decision to bid decreases as the number of bidders increases.

Keywords: Bidding; Strategy; Decision to bid; Hong Kong; Singapore

1. Introduction

Globalisation is presenting contractors with more opportunities to compete internationally. Contractors compete internationally for many reasons including to the increase long-term profitability, to balance growth and to mitigate the cyclical impact of construction demands in established markets [1]. Bienviste [2] urges that there is a need for firms to evaluate their business strategy in terms of methods of competition from other regions following the increased global activities. Direct competition through bidding is the most common method of job distribution in the construction industry [3]. It is concerned with contractors making strategic decisions in respect of: (i) project selection whether or not to bid for a job, and (ii) determination of bid price if contractors opt to bid [4]. With limited response time to different sets of bidding opportunities, contractors need to strive for projects that put them at an advantage in terms of pricing efficiency.

In examining the 'right' price in construction bids, Wallwork [5] argues that contractors' ability to win the 'right' project and determine the 'right' price level are of equal importance for survival and making a profit. The bid/no-bid decision, therefore, requires considerable amount of deliberation from contractors, especially for firms that aim to place themselves in global construction markets. Previous works in modelling contractors' decision to bid have attempted to offer contractors with (i) decision support systems in facilitating their decision to bid; and (ii) a forecasting tool to predict bid/no-bid decisions (e.g. Ahmad [6], Wanous et al. [7], and Lowe and Parvar [8]). From the international construction perspective, Dikmen and Birgonul [9] proposed a risk-based go/no-go model to support international market entry decision. Despite

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the availability of these strategic tools, success in a bidding competition is in part a function of detailed knowledge about a particular market environment [10].

At an international level, most contractors will target market sectors within countries or territories particularly at times where the local economy is expected to boom since this is likely to generate higher profits. In Singapore, for example, both foreign and local contractors are eyeing the expected booming construction market following the embarkation on the island's integrated resort and casino projects. In order to compete successfully, international contractors not only need to have an understanding of the make up of the different market environments within each country but also of contractor behaviour within those environments.

This paper compares the extent to which contractors' operating in different construction markets is likely to be influenced by market environment factors, i.e. market conditions and number of bidders in their decision to bid. This study focuses on two city states, i.e. Hong Kong (HK) and Singapore. The specific objectives are to: (i) compare changes in contractors' decision to bid at the time of two extreme market conditions, i.e. boom times with low need for work, and recession times with high need for work; (ii) model the relationship between the market conditions and probability of a *bid/no-bid* decision; and (iii) consider the effect of number of bidders on contractors' decision to bid. Multiple bid/no-bid responses of medium to large contractors based in HK and Singapore were collected via a designed bidding experiment that allows direct comparisons to be made. The experiment findings should provide a valuable insight into the contractors' decision to bid behaviour, especially to contractors intending to bid for jobs in these two construction markets.

2. Market environment and decision to bid

According to Dyer et al. [10], contractors' success in a particular market environment is not through conformity to a narrow notion of rationality, but from acquiring and utilising a set of environmental specific rules of thumb which permit them to avoid the pitfalls in their decision making. The environment within which contractors compete is seen by Newcombe [11] as consisting of (i) the general environmental factors of politics and law, economics, sociology and technology and (ii) competitive environmental factors of finance, plant, labour, management, suppliers, subcontractors, consultants and clients. It would seem that market environment is an all embracing subjective term which varies across market sectors as well as geographical locations. The construction market sectors can be viewed in terms of housing, general building contracting and civil engineering. Geographical locations can be defined in terms of continent, country, region, or even city.

Two important factors influencing contractors' behaviour within a construction market are the prevailing market conditions and number of competing bidders [12]. The prevailing market conditions oscillate between periods of economic boom and recession. Thorpe and McCaffer [13] regard market conditions as a subjective term which on a macro-industry level includes such factors as the total construction order for all type of works and construction price levels while on a micro-company level includes competitor activity and construction opportunities in local, national and international markets. Ngai et al. [14] take the view that there is no definitive measure of market conditions in construction that exists in the literature and various variables are used such as the ratio of tender price index to construction cost index, number of bids received for particular projects, and rate of change of a particular price index (e.g. tender price index). De Neufville et al. [15] found that market conditions strongly affect contractors' bidding behaviour and provide evidence of a relationship between the market conditions and intensity of competition (i.e. number of competing bidders). The authors found that less bids were recorded in what they refer to as 'good' years whereas competition becomes fierce in 'bad' years when few projects are available, but no model has as yet been proposed.

The number of competing bidders reflects the capacity of the industry in terms of 'active' market players capable to undertake a project [16]. De Neufville et al. [15] found that the average number of bidders remains constant about two years before a downturn or rise in number of projects. This implies that contractors anticipate future conditions in deciding whether to bid or not. Also, large number of bidders may inhibit competition as probability of winning decreases; this increases contractors' overheads and ultimately costs the owners more [17]. Ngai et al. [14] claim that clients should vary the minimum number of bidders in any new bidding situation with prevailing market conditions in order to obtain the most competitive bids in the most cost-efficient way. Conversely, Runeson [18] argues that the question whether the number of bidders is independent of market conditions or is it a function of market conditions may not be so important since bid prices have been found to change with market conditions (e.g. Chan et al. [19], Runeson [20] and Runeson [21]). Despite the controversy on the importance of number of bidders, previous works suggest that the contractors' decision to bid behaviour responds to both the market conditions and number of competing bidders.

3. Competing in Hong Kong and Singapore

The make up of the construction firms in HK and Singapore share the dominant structural characteristics of the construction industry whereby there are large number of small firms and relatively less medium to large contractors competing in the market. A large proportion of small contractors are working as subcontractors where subcontracting practices are well established in both construction markets [22,23]. The construction markets of these two city states are internationally renowned of foreign players. Open bidding for public works is well adopted in HK with