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Winner's Curse or Signaling? Bidding Outcomes in the Chinese Land Market

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Since its liberalization in 2003, the urban land lease market in China has experienced substantial growth in terms of both the volume and value of transactions. At the same time, significant transaction premiums are observed in these land transactions; these premiums make the general public skeptical about the emergence of a property market bubble that stems from aggressive bidding in the land market. In this paper, we seek to rationalize this phenomenon by means of the event study method. By using a land transaction dataset from Beijing for the period 2003 to 2013, we find that the capital market reacts significantly to land bidding events. In addition, the land transaction premium observed in the Chinese land market can be explained by the signaling effect, in that developers tend to use the bidding price as a signaling device to disseminate favorable private information to the marketplace.

Keywords

Winner's Curse, Signaling, Land Transactions

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1. Introduction

Since its liberalization in 2003, the urban land lease market in China has experienced substantial growth in terms of both the volume and value of the transactions. This rapid development has been largely due to the adoption of more transparent and market-oriented mechanisms in the allocation process of urban land leases, such as English auctions and the public tendering and listing of quotations, in contrast to the opaque and policy-dictated private negotiation system that was popular in the past. For instance, from 1995 to 2002, private negotiations mediated nearly 86% of all land leases in China (Lin and Ho, 2005). In the meantime, the competition for land for urban development has become more intense than ever, thanks to the booming property market stimulated by economic growth and urbanization.[1] Both private developers and state-owned enterprises (SOEs) join in the race to secure land for the development of urban real estate projects.

Early studies of the Chinese land market find that land transactions are associated with significant premiums relative to the listing price of the land (Qu and Liu, 2012). This phenomenon, in combination with the recent skyrocketing property prices, causes skepticism in the general public about the emergence of a property market bubble that stems from aggressive bidding in the land market.[2] One rationalization of the high land bidding premium concerns the auction theory, which predicts that, when the information set of the asset at auctions is common to all bidders where they derive value estimates, i.e., common value auctions, the winning bidder will be the one who most overestimates the true value of the asset, thus becoming the victim of the winner's curse. The likelihood and severity of the winner's curse depend on the intensity of the competition in the auction because both the winning bidder and his/her competitors may overbid the true value of the asset in the bidding process.[3] Since land bidding practices feature common value auctions, the observed high bidding premium in land transactions in China may be a reflection of the winner's curse in these transactions. With the presence of information asymmetry, another rationalization of the high price premium phenomenon in the Chinese land market is the signaling effect in that developers use high bids to convey their private information to the market in anticipation that the market will interpret the signal in a positive manner.[4]

[1] Liu et al. (2002) provide evidence that economic growth has a long-term effect on both housing and non-housing investments in China.

[2] Cruz (2008) shows that the housing affordability in China is among the lowest in Asia.

[3] In an experimental setting, Kagel and Levin (1986) find that the winner's curse is more serious with more bidders.

[4] For example, in his study of corporate takeover, Roll (1986) argues that the bidding price may contain the information of the bidder, and the market may well interpret a bid as signaling higher expected future cash flows of the bidding firm than previously estimated.

The potential land bidders are heterogeneous in terms of cost structure, development experience and expertise, financing capabilities, and property market outlook, which are not known to the public. If capitalizing on "in-house" information is in the interest of land bidders, they will use the bidding price as a creditable (costly) signal to resolve the information asymmetry between themselves and the marketplace.

From the perspective of the regulators, it is important to understand the reasons for the willingness of the developers to pay high premiums in the land bidding process. Specifically, are the observed high premiums a reflection of the winner's curse that is prevalent in the Chinese land market or the result of the signaling of favorable private information from the developers? In this paper, we empirically examine this issue by using data from the Chinese land auction market. We argue that, as public information events, the outcomes of land auctions are closely scrutinized by the stock market. If the winning bid is interpreted by the stock market as a winner's curse, the stock price of the winner shall fall accordingly. In contrast, if the stock market is convinced of the favorable private information that the winning bidder would like to signal through the high winning bid, despite the potential winner's curse, the stock market will still react positively and stock price of the winner shall rise. Hence, depending on the response of the stock market to the outcome of the auction, we can attribute the observed high land price premium to either a winner's curse or a signaling effect.

This paper is linked to the earlier literature on bidding behavior, which is restricted to markets such as the oil and gas lease markets (Capen et al., 1971; Hendricks et al., 1987), corporate takeovers (Roll, 1986; Boone and Mulherin, 2008), initial public offerings (IPOs) (Keloharju, 1993), and land auctions (Tse et al., 2011). Although Tse et al. (2011) shed light on the bidding behavior in Hong Kong land auctions, due to the highly concentrated market structure in which incumbent firms are perceived to possess market power in the Hong Kong land market, their results can hardly be generalized to a land market characterized by intense competition, such as that in China.[5]

This paper therefore contributes to the literature as follows. First, we add to the literature on bidding behavior. Given the limited evidence with respect to the land market, we extend the earlier literature by focusing on the bidding behavior in the land market. Second, we use a land transaction dataset from the Chinese land market that features intense competition. Hence, our study will complement the existing literature on land auctions that primarily concentrates on land markets characterized by an oligopolistic structure, such as that in Hong Kong. Third, we control for the types of bidders in the land bidding event, both privately owned firms and SOEs. SOE land bidders are unique in the Chinese land market due to their peculiar ownership structure,

[5] Lai and Wang (1999) and Ching and Fu (2003) show that the Hong Kong land market features an oligopolistic structure.

which grants them an edge in the competition for land against private firms. Therefore, in this paper, we offer some first evidence that regard the issue of whether the type of market participant affects the market perception of the outcome of a land bid.

To control for differences in location, this study uses a specific metropolitan area in China, which is Beijing. Beijing has at least two advantages for conducting this research. First, Beijing possesses massive land transaction data within a short period of time. Second, the land lease market is competitive and the transactions involve both semigovernmental entities and private companies. The results indicate that, on average, the land bidding premium has a significant positive effect on the share price of the winning bidder, which reflects the stock market interpretation of the bidding premium not as a winner's curse but rather as signaling favorable private information on the part of the winning bidder. However, the SOE land bidders do not seem to affect the market assessment of the land bidding outcomes. We also find that joint bidding has a significant negative effect on the share price of the bidder, which may be due to the likelihood of enhanced financing capability through joint bidding to lead to the overbidding of the true land value.

The remainder of this paper is organized as follows. The relevant literature will be reviewed, followed by a description of the data, discussion of the empirical model, and presentation of the empirical results. The paper then closes with concluding remarks.

2. Literature Review

Capen et al. (1971) first described the concept of the winner's curse. In their study on oil and gas lease sales in the Gulf of Mexico, they find that the winning bidder tends to be the one who has most overestimated the potential of the reserve and that the "successful" bidder may not be so successful in the end. In other words, the winner is "cursed" because s/he has paid too much to acquire the lease. The winner's curse has been extensively studied in a variety of circumstances, such as in oil and gas lease sales (Hendricks et al., 1987), highway contract auctions (Thiel, 1988), corporate takeovers (Roll, 1986; Boone and Mulherin, 2008), failed bank acquisitions (Giliberto and Varaiya, 1989), IPOs (Keloharju, 1993), and land auctions (Tse et al., 2011). However, the empirical evidence suggests that the existence of a winner's curse is not conclusive and depends on the industry and sample periods that underlie these studies.

Hendricks et al. (1987) examine auctions of leases on the outer continental shelf and find that firms do not account for the winner's curse in their bidding strategies. Thiel (1988) studies highway contract auctions and provides evidence that the bidders on the highway contracts shave their bids to avoid

the winner's curse. In a study of corporate takeovers, Roll (1986) applies the concept of the winner's curse and poses the hubris hypothesis that overconfident managers of cash-rich firms overestimate the value of the target firm in takeovers and therefore fall prey to the winner's curse. He reviews the stock price data of bidders and targets around the takeover announcement date and finds evidence to support the hubris hypothesis. Contrary to Roll's finding, Boone and Mulherin (2008) report that returns to bidders are not significantly related to takeover competition. They attribute this finding to the involvement of prestigious investment banks in corporate takeovers that do not promote overbidding. Giliberto and Varaiya (1989) test whether companies that acquire failed banks are victimized by the winner's curse. Their results show that the winning bids tend to increase as the number of competitors increases, which is consistent with the theory prediction that bidders fail to adjust their bidding strategies to elude the winner's curse. Keloharju (1993) confirms the existence of the winner's curse in the Finnish IPO market by offering evidence that the initial returns are negative for investors with a large allocation from IPOs, whereas Chan et al. (2001) document contradictory evidence that the IPOs of Hong Kong real estate investment trusts (REITs) are associated with significant underpricing at roughly the same degree as U.S. industrial firms. In their study of Hong Kong land auctions, Tse et al. (2011) find that land bidders in Hong Kong are prone to the winner's curse when the intrinsic value of the land parcel is uncertain.

Not only can a high winning bid trap the bidder into a winner's curse, it can at the same time signal a bidder's private information to the market to mitigate the problem caused by asymmetric information. However, to effectively communicate private information to the capital market, the signal has to be observable and reliable (Connelly et al., 2011). In his seminal work on labor markets, Spence (1973) shows that a job market candidate can signal his/her ability to prospective employers by finishing costly and challenging degree studies. This signal is believed to be reliable because a low-quality candidate will find higher education too difficult to complete. The signaling theory has also been applied to distinguish high-quality firms from low-quality firms, with the debt of a firm (Ross, 1977) and its dividends (Bhattacharya, 1979) to serve as such signals, because only high-quality firms can sustain a high level of debt and dividend payout. Reily (2001) and Connelly et al. (2011) provide a comprehensive review on signaling research. Information imperfection also exists in the real estate market, in which signaling may be at play. For instance, a property seller has better information with regard to the condition of the property than potential buyers; thus, s/he can signal the good condition of the property by investment in improvement and maintenance (Ben-Shahar, 2004). Levitt and Syverson (2008) point out that, in real estate transactions, agents are better informed than their clients so that they can benefit from such an information advantage. They find that houses owned by real estate agents sell for 3.7% more than comparable houses. Wachter and Wong (2008) show that tree plantings can be used to signal neighborhood and house conditions that lead to a parcel transaction premium between 7% and 11%.

Of the few papers on land auctions, the study by Ching and Fu (2003) is the first to apply the event study method in the analysis of contestability in the land market. By using Hong Kong land auction data, they provide evidence of an imperfectly contestable land market through the positive abnormal returns of the stocks of the land bidders on the day of the land auction. Furthermore, they show that the expected abnormal returns are positively influenced by the land value and the land disposal level of the government, and negatively affected by the liquidity of the property market liquidity. Ooi and Sirmans (2004) adopt an estimation technique similar to that of Ching and Fu (2003) to examine the wealth effect of land auctions in Singapore. They find that positive excess returns are associated with announcements of successful land acquisition, which offers support for the hypothesis that the excess return is positively related to the ability of the land bidder to create value in the development process. Tse et al. (2011) share findings similar to those of Ching and Fu (2003) in their study on the land bidding behavior in the Hong Kong land market. They show that land bidding events are associated with positive abnormal returns. In addition, they find that land bidders tend to use the bidding price of the land to signal their expectations about future market prospects.

Overall, the previous literature offers evidence that competitive bidding may lead to a winner's curse and that the bidding price can potentially function as a signal to alleviate information asymmetry. However, the evidence is very limited in terms of the bidding behavior in the land market; therefore, this paper intends to bridge this gap by providing empirical evidence on the land bidding practices in China.

3. Data

As market-oriented methods to allocate urban land, such as open English auctions and the tendering and listing of quotations, were implemented on July 1, 2002, we focus in this study on the period after 2002, that is, from March 2003 to May 2013. The land transactions completed through market mechanisms are believed to reflect the fundamental value of the land as compared to prices taken from other non-market forms of land transactions, such as private negotiation. The urban land transaction information of Beijing is obtained from the website of the Beijing Municipal Land Arrangement and Storage Center (BMLASC), a government agency in charge of leasing state-owned land in Beijing. This agency publishes information on completed land transactions and new listings on its websites on a regular basis. For each land transaction, the BMLASC maintains detailed land information, such as the listed reserve and transaction prices, transaction method (i.e., open ascending English auctions, public tendering, or listing of quotations), the winning bidder, and the structural attributes of the land.

The winning bid for a land parcel can come from either a single bidder or a bidding consortium. Information on the winning bidder enables identification of whether the company is publicly listed or privately owned, which is crucial in this study because the stock market reaction to a bidding outcome is only observable for publicly listed companies. With this information, we can also verify whether the bidder is a private business or an SOE so that we can control for the SOE effect on the stock market response. SOEs are widely perceived to be aggressive bidders due to their superior financing capabilities. In addition, we control for the market perception of joint bidding if the winning bid comes from a bidding consortium. On the one hand, bidding jointly reduces the degree of competition that a favorable bidding price is otherwise likely to cause, thus leading to a positive market reaction. On the other hand, with enhanced financing ability, joint bidding exposes bidders to a winner's curse that will be negatively interpreted by the market. The information that concerns the returns on the stock of the winning bidder and the market index that surrounds the date of the land transaction are obtained from Wind Info.[6] In the calculation of the stock return, we adjust the stock price for stock dividends and stock splits that affect the stock price but do not fundamentally reflect the profit or loss of a firm.

The dataset contains 869 land transactions, 574 by privately owned businesses and 295 by publicly listed firms. As it is not feasible to obtain the return information of private businesses, we focus on the land transactions associated with listed firms. We remove observations that have listing information after the date of the land transaction. In addition, if the stock price information is less than what is required by the specification of the estimation window, i.e., 120 days, the observation is deleted from the working dataset. In the end, 225 observations are retained for the following empirical analysis. These events involve 72 bidders. Table 1 provides the descriptive statistics of the data.

4. Empirical Model and Results

As land transactions are public information events, they are closely monitored by the stock market. Hence, the response of the market to a land bidding event can be quantified by the abnormal return of the stock of the winning bidder that surrounds the event date. Our analysis is conducted with a two-step procedure. In the first step, we follow the event study method to use the market model for predicting the normal return of the stock of the winning bidder in the absence of an event to estimate the abnormal returns related to the land bidding event for the winning bidder. The market model is specified as follows:

[6] Wind Info is a primary data provider that specializes in the Chinese financial market with more than a 90% market share (see www.wind.com.cn).

$$R_t = \alpha + \beta R_{mt} + \varepsilon_t \quad (1)$$

where R is the daily stock return of the winning bidder and R_{mt} is the daily return of the market portfolio. If the stock of a bidder is listed in Hong Kong, we use the Hang Seng Index to proxy the market portfolio. If the stock of a bidder is listed in mainland China, we use the Shanghai Composite Index instead. α and β are the coefficients to be estimated in the market model and ε is the error term. The estimation window of the market model is 120 to 4 days before the land bidding event, i.e., $t_{Estimation} \in [-120:-4]$.

Table 1 Descriptive Statistic (N = 225)

Continuous Variable	**Mean**	**Std.**	**Min**	**Max**
Transaction Price (in million RMB)	1,156.05	988.96	15.60	5,050.00
Parcel Size (in thousand M^2)	144.83	150.80	3.31	1,477.98
Floor-to-Site Ratio	2.67	2.21	0.52	17.26
Binary Variable	**Mean**	**Obs.**		
Joint Bidding	0.29	66		
Transaction Method				
ZhaoBiao (Public tender)	0.48	109		
GuaPai (Listing of quotations)	0.29	66		
Auction	0.23	50		
Transaction Year				
2003	0.01	3		
2004	0.03	7		
2005	0.03	7		
2006	0.06	14		
2007	0.09	21		
2008	0.08	17		
2009	0.12	26		
2010	0.29	65		
2011	0.15	33		
2012	0.08	18		
2013	0.06	14		
Bidder Type				
SOE	0.71	159		

On the basis of the parameter estimates from the market model (Model 1), we estimate the abnormal return within the event window of the winning bidder with the following specification:

$$AR_t = R_t - \hat{\alpha} - \hat{\beta} R_{mt} \quad (2)$$

where AR is the abnormal return within the event window and $\hat{\alpha}$ and $\hat{\beta}$ are the coefficient estimates from the market model (Model 1). In the estimation of the market model (Model 1), we assume that events are independent and impose no restrictions on the estimation of the abnormal return across events. As Ching and Fu (2003) argue, under the market model, the stock return is determined by a single market factor; hence, there would be no efficiency gain from the joint estimation of the market model. Contrary to the studies of Ching and Fu (2003), Ooi et al. (2004), and Tse et al. (2011), Model (1) does not impose restrictions on the stock beta for the bidder with overlapping estimation windows, i.e., multiple land bids within one estimation window. In following Campbell et al. (1997), we assess the significance of an (cumulative) abnormal return of the stock of the winning bidder that surrounds the land bidding event by using J1 and J2 statistics which are specified as follows,

$$J_1 = \frac{\frac{1}{N}\sum_{i=1}^{N} \hat{\mathrm{CAR}}_i}{[\frac{1}{N^2}\sum_{i=1}^{N} \hat{\sigma}_i^2]^{\frac{1}{2}}} \tag{3}$$

$$J_2 = [\frac{N(L_1-4)}{L_1-2}]^{\frac{1}{2}} \times [\frac{1}{N}\sum_{i=1}^{N} \frac{\hat{\mathrm{CAR}}_i}{\hat{\sigma}_i}] \tag{4}$$

where L_1 denotes the length of the estimation window, $\hat{\mathrm{CAR}}_i$ is the cumulative abnormal return of event i, and $\hat{\sigma}_i$ is the standard error of the cumulative abnormal return estimate $\hat{\mathrm{CAR}}_i$. Both the J1 and J2 statistics have an approximately standard normal distribution.

In the second step, we examine the market reaction to the outcome of the land bidding, i.e., a land bidding premium with reference to the listing price of the land, through the following regression specification:

$$CAR = \beta_0 + \beta_1 B_P + controls + \upsilon \tag{5}$$

where $controls$ are a set of control variables, i.e., SOE and joint bidding, υ is the error term, and B_P is the bidding premium that is calculated as follows,

$$B_P = \frac{\text{Transaction Price}}{\text{List Price}} - 1 \tag{6}$$

In the estimation of Regression (5), we account for cross-sectional events that cluster for the same bidder by using a cluster-robust standard error for statistical inference.

4.1 Land Bidding Event Study Results

Table 2 presents the daily abnormal return in a 5-day event window around the land acquisition date. The significant and positive abnormal returns found on the day of the land transaction indicate that the stock market has reacted favorably to the land bidding event and that the shareholders of the winning bidders are rewarded with a 0.26% abnormal return on average. This result is comparable to that of Ching and Fu (2003) where they find a significant abnormal return on the land auction date that averages 0.40% in Hong Kong. However, the magnitude of the abnormal return can be larger than 0.06% as observed by Ooi and Sirmans (2004) who use Singapore land auction data. Our finding is not consistent with that of Tse et al. (2011) who, by using Hong Kong land auction data, report an insignificant negative abnormal return of –0.11% on the auction day.

It is interesting to note that significant positive abnormal returns of the stock of the winner are also found 1 day before the land acquisition, which is consistent with the finding of Ching and Fu (2003). It seems that, given all of the information available, the capital market is capable of predicting with some certainty the winning bidder and the competition intensity of the upcoming land bidding competition. The 3-day CAR(-1:+1) and the 2-day CAR(-1:0) are 0.54% and 0.66%, respectively, which are significant at a 5% level according to both the J1 and J2 statistics. Finally, the abnormal returns on the stock of the winning bidder after the event are not significantly different from zero, thus showing that the capital market fully incorporates the information that concerns the land acquisition event in the stock prices of the winner without further price corrections after the event.

4.2 Market Response to Bidding Outcome

The event study results suggest that the stock market reacts to land acquisition events, thus leading to significant positive abnormal returns in the stocks of the winner around the day of the land acquisition. Given the (cumulative) abnormal return estimation results in the first step, we proceed to examine how the capital market interprets the land bidding outcome, i.e., the bidding premium. In carrying out a regression analysis that follows Model (5), we first calculate the bidding premium relative to the listing price of the land, in accordance with Model (6). We remove observations with a missing listing price from the 225 observations and retain 156 observations for the regression analysis. The regression results are reported in Table 3. The dependent variable is CAR(-1:+1).

In Ordinary Least Squares (OLS) 1, we include the bidding premium as the only explanatory variable. The significant positive coefficient of B_P indicates that the overbidding of the land developer relative to the listing price of the land has a significant positive effect on the market reaction to the land

acquisition event. This finding reflects the interpretation of the capital market of the high winning bid not as a winner's curse, but rather as a reliable (costly) signal that reveals favorable private information on the part of the winning bidder. In OLS 2, we augment OLS 1 with variable SOEs to control for the effect of the market perception of the winning bidder type, i.e., an SOE vs. a private company. Due to the implicit guarantee from the state, SOEs are believed to have better access to funding from state-owned commercial banks. We expect that their superior financing capability more likely exposes the SOEs to the winner's curse as compared with private bidders; hence, the sign of the SOE coefficient should be negative. The results of OLS 2 show that the coefficient of B_P hardly changes after controlling for the SOE effect. Despite its insignificance, the coefficient of SOE is negative, as expected.

In OLS 3, we expand OLS 1 by including the variable "Joint Bidding" to control for the market response to a land parcel bid by a bidding consortium. Bidding jointly can reduce the level of bidding competition by deterring potential entrants into the land competition. However, the enhanced financing capability may also encourage the bidding consortium to bid aggressively and thus fall into the trap of the winner's curse. Our results show that, after controlling for joint bidding, the coefficient of B_P only marginally decreases and remains statistically significant. The estimate of the coefficient of joint bidding is negative and significant at 5%, which suggests that the winner's curse may account for the stock market response to the joint bidding outcome. OLS 4 controls for both SOE and joint bidding effects. Compared with the results from OLS 1 to OLS 3, all of the coefficient estimates remain fairly consistent.

To examine the robustness of our findings with respect to CAR specification, we replace the dependent variable CAR(-1:+1) with CAR(-1:0) and repeat the regression analysis. The results of the robustness check are displayed in Table 4. The magnitude and significance of the coefficient estimates of all of the variables are consistent with those reported in Table 3 that use CAR(-1:+1) as the dependent variable. Overall, the regression results offer general support for the signaling argument that a winning bid serves as a reliable signal to reveal private information on the part of the land bidder to the capital market. Moreover, the capital market is averse to joint bidding, which generally leads to the winner's curse. Notably, we do not find statistically significant results to support the general perception that SOE land bidders are more prone than private bidders to a winner's curse.

Table 2 Event-Study Results (N = 225)

Event Window	J_1 Statistic	J_2 Statistic	Average CAR	Median	Standard Deviation	Min	Max
-2	0.69	0.53	0.11%	-0.09%	2.71%	-8.22%	13.02%
	(0.49)	(0.60)					
-1	2.52	2.31	**0.40%**	0.00%	2.49%	-5.34%	16.56%
	(0.01)	(0.02)					
0	1.63	1.95	**0.26%**	0.04%	2.55%	-6.46%	8.30%
	(0.10)	(0.05)					
+1	-0.75	-0.35	-0.12%	-0.01%	2.41%	-8.20%	6.21%
	(0.45)	(0.72)					
+2	0.62	0.92	0.10%	0.05%	2.88%	-10.10%	20.69%
	(0.54)	(0.36)					
CAR(-1:+1)	1.97	2.26	**0.54%**	0.29%	4.37%	-14.15%	21.01%
	(0.05)	(0.02)					
CAR(-1:0)	2.93	3.01	**0.66%**	0.24%	3.47%	-8.59%	21.23%
	(0.00)	(0.00)					

Notes: This table reports the effect of the land bidding event on the stock price of the winning bidder. P values associated with J1 and J2 statistics are shown within the brackets. The estimation window is 120 to 4 days before the land transaction date. CAR(-1:+1) is the cumulative abnormal return that covers a 3-day period, i.e., 1 day before and 1 day after the land bidding event.

Table 3 Regression Results (N=156)

	OLS 1		OLS 2		OLS3		OLS 4	
Constant	-0.0041		0.0015		0.0003		0.0071	
	(0.0056)		(0.0071)		(0.0052)		(0.0074)	
B_P	0.0161	**	0.0160	**	0.0145	**	0.0143	**
	(0.0065)		(0.0066)		(0.0061)		(0.0063)	
SOE			-0.0080				-0.0094	
			(0.0080)				(0.0081)	
Joint Bidding					-0.0174	**	-0.0183	**
					(0.0081)		(0.0085)	
R^2	0.02		0.03		0.05		0.06	
F Statistic	6.15		4.05		3.89		2.90	
No. Clusters	56		56		56		56	

Note: The dependent variable is CAR(-1:+1), the cumulative abnormal return covers a 3-day period, i.e., 1 day before and after the land bidding event. Cluster robust standard errors of coefficient estimates are reported within the brackets. ** Significant at the 5% level.

Table 4 Robustness Check (N=156)

	OLS 1		OLS 2		OLS3		OLS 4	
Constant	-0.0023		-0.0003		0.0012		0.0040	
	(0.0041)		(0.0067)		(0.0038)		(0.0070)	
B_P	0.0166	**	0.0166	**	0.0153	**	0.0153	**
	(0.0067)		(0.0068)		(0.0065)		(0.0066)	
SOE			-0.0029				-0.0040	
			(0.0074)				(0.0074)	
Joint Bidding					-0.0137	**	-0.0141	**
					(0.0057)		(0.0060)	
R^2	0.05		0.05		0.07		0.08	
F Statistic	6.17		3.74		4.34		2.89	
No. Clusters	56		56		56		56	

Note: The dependent variable is CAR(-1: 0), the cumulative abnormal return covers a 2-day period, i.e., the land bidding day and 1 day beforehand. Cluster robust standard errors of coefficient estimates are reported within the brackets. ** Significant at the 5% level.

5. Conclusions

In this paper, we provide empirical evidence that concern the stock market response to the outcomes of land bidding in the Chinese land market. We make use of the event study method to estimate the capital market response on the day of the land acquisition. We then use regression analysis to examine the manner in which the capital market interprets the bidding premium in land transactions, while controlling for the SOE and joint bidding effects.

With the use of land transaction data in Beijing from 2003 to 2013, we show that the capital market treats the acquisition of land as a public information event and reacts positively, as reflected in the stock prices of the winning bidder. On the basis of land bidding event-related (cumulative) abnormal return estimates, we find that the capital market assesses the land bidding premium as signaling the private information of the bidder. With this finding, we argue that, despite the possibility that a high winning bid will induce a winner's curse, a positive signaling effect with a high winning bid dominates the negative effect of the winner's curse. We also report that bidding jointly results in a negative market response due to the potentially aggressive bidding from a bidding consortium with enhanced financing capabilities. Finally, the capital market does not seem to discriminate between bidding outcomes on the basis of bidder type, i.e., SOEs vs. private companies.

Our results point to the complexity of the land bidding process and imply that it is information asymmetry that prompts bidders to bid aggressively in land competition in China, in contrast to irrational bidding behavior that would contribute to a land price bubble, as perceived by the general public. For policy makers, this study lends support to the reduction of market imperfections through the stimulation of information dissemination in the marketplace, which would reduce the information cost associated with land bidding practices in China and improve housing affordability.

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