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Causes of business to government (B2G) corruption in tendering and bidding in China

Bing Zhang¹; Yun Le²; Bo Xia³; and Martin Skitmore⁴

Abstract: Business to government (B2G) corruption is thought to be a common phenomenon in the Chinese construction sector, especially in public construction projects, inducing many accidents and losses. As a precursor to its reduction, or elimination, this paper examines the reasons for B2G corruption by identifying the causes and their relative influence in the tendering and bidding process. To do this, a total of 24 causes are first identified through literature review and the results of semi-structured interviews with 9 top construction enterprise managers in China's construction market. An opinion questionnaire survey is further used to rank and analyze the causes. A factor analysis is also used to reveal six major underlying causal dimensions of B2G corruption, comprising flawed regulation systems, negative encouragement, lack of professional ethics and codes of conduct, illegitimate gains, lack of competitive and equitable bidding practices and procedures and the influence of *guanxi*. Concluding remarks include the study's potential contribution to practice and regulation in the fight against corruption in the Chinese construction industry.

Author keywords: B2G corruption; Causes; Influence; Tendering and bidding process; China.

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20 INTRODUCTION

21 The construction sector has been identified as the most corrupt industry in the world (de Jong et al., 2009,
22 Hardoon and Heinrich, 2011) and almost all phases of construction projects have become problem areas
23 (Stansbury, 2005). The term of bidding is the moment in which bidders enter their price bids and
24 tendering starts with the Request For Proposals and ends with the contract award, be merged into
25 tendering and bidding process (Kerridge et al., 2000, Halaris et al., 2001), which is the most serious
26 process for corruption (Agbibo, 2012, Bowen et al., 2012, Oyewobi et al., 2011, Ray et al., 1999).
27 Around 35% of respondents of a recent UK survey by CIOB (2013) believe that the tendering and bidding
28 process is the most vulnerable to corruption in construction sector. For Europe as a whole, direct loss due
29 to corruption in the tendering and bidding process for road and rail construction, water and waste
30 construction, urban and utility construction is estimated to be 17%, 7% and 20% of project prices
31 respectively (EU (2013), while in Japan, corruption in the tendering and bidding process is said to be
32 responsible for 16% to 33% of project prices (McMillan, 1991).

33 As the world biggest construction market, China has been experiencing more serious corruption in
34 tendering and bidding process (Zou, 2006). According to China Business Weekly (2014), there are CNY
35 10 trillion (USD 1.6 trillion) public construction projects calling for tenders annually, with an estimated
36 corruption cost of CNY 800 billion (USD 128.4 billion) during the tendering and bidding process, i.e. 8%
37 of the total procured value. The National Bureau of Corruption Prevention report 21766 cases of
38 corruption recorded in the public construction sector between 2009 and 2012, 3305 of which occurred in
39 the tendering and bidding process - accounting for 15.2 % of all reported cases (Xinhua Net, 2012). At the
40 same time in Beijing, as many as 65% of construction corruption cases occur in the tendering and bidding
41 process each year (zhao, 2012).

42 In the tendering and bidding process, business to government (B2G) corruption is ubiquitous (Luo, 2004).
43 B2G corruption involves government officials and construction personnel, who conduct exchanges under
44 the patron–client relationship (Wang, 2014), such as government officials disclosing important project
45 information to help a specific construction enterprise win the tender. By doing so, they gain illegal
46 benefits at the expense of the whole society. According to Wangyi Net (2014), almost 20 senior
47 government officials have been involved in corruption during the tendering and bidding process of
48 railway construction projects, helping 23 giant state owned constructors win 57 express railway projects
49 with the total investment of CNY 178.8 billion (USD 28.79 billion) in return for more than CNY 3.1
50 billion (USD 0.499 billion).

51 A number of studies have been conducted to identify the reasons for construction B2G corruption. Some
52 point out that this is because the government in China controls many construction projects, especially the
53 larger ones, and officials at various levels possess considerable power to monopolize these projects (Gao,
54 2011, Walder, 1995). Other factors include lack of supervisory institutions and transparency (Le et al.,
55 2014a, Le et al., 2014b), information asymmetry (Xiang and Xie, 2008), complexity of projects (Chan et
56 al., 2004, Zou et al., 2007) and cultural issues (Li, 2011a, Luo, 2008).

57 However, although dozens of tendering and bidding B2G corruption cases are uncovered each year, far
58 more frequently than in other stages, very little is known with certainty of the reason why B2G corruption
59 is widespread wholly in the tendering and bidding process (Zhang et al., 2015). A more detailed analysis
60 is needed to help reduce and ultimately eliminate corruption at this stage. Therefore, the purpose of this
61 study is to identify and analyze the causes of B2G corruption in tendering and bidding for Chinese
62 construction projects.

63 **LITERATURE REVIEW**

64 **B2G corruption**

65 Generally speaking, corruption is defined as the abuse of entrusted power for private gain and can be
66 divided into two categories: B2B (business to business) corruption and B2G (business to government)
67 corruption, where B2G corruption happens between businesspersons and government officials while B2B
68 corruption occurs between businesspersons (Fan, 2002, Lindskog et al., 2010). Compared with B2B
69 corruption, B2G corruption has received widespread public attention, because rent-seeking government
70 officials who regulate the market can abuse their power to bypassing laws and regulations (Melese, 2002).

71 Construction sector includes projects initiated by both governments and private sectors (Stansbury, 2005),
72 involving numerous parties, various processes, different phases of work, and a great deal of inputs (Takim
73 and Akintoye, 2002). All participants could be involved in corruption, including government officials,
74 funders, project owners, contractors, consultants, suppliers as well as the business and professional
75 associations (Bowen et al., 2012). Many forms of corruption are practiced, the most frequently mentioned
76 being client abuses (Williamson et al., 2004, May et al., 2001), bribery, fraud, collusion (Zarkada-Fraser
77 and Skitmore, 1997, Zarkada-Fraser, 2000, Zarkada-Fraser and Skitmore, 2000, Zarkada-Fraser et al.,
78 1998), bid rigging, embezzlement, kickback, conflict of interest, etc. (Le et al., 2014b).

79 The tendering and bidding process is particularly vulnerable, with more than 50 forms of corruption being
80 found by the India Central Vigilance Commission (2012) for example. B2G corruption also affects
81 tendering and bidding activities with special severity, since the tendering and bidding determines which
82 enterprises win the construction projects.

83 The situation in China is no different, where existing corruption cases suggest that winning construction
84 projects sometimes depends on the relationship with officials to gain competitive advantages (Alutu,

85 2007). There is also a wide variety of forms of B2G corruption in the tendering and bidding process in
86 China, which makes the anti-B2G corruption almost a mission impossible (Li et al., 2013).

87

88

89 **Causes of corruption in construction**

90 Since the ancient Egyptians, there is an absolute agreement that corruption is a cancer on society that
91 needs to be removed (Araia, 2013). In pursuit of this, a wave of theoretical and empirical research has
92 been conducted on the causes of corruption (Myint, 2000).

93 Theoretically, Jain (2001) points out there are three prerequisites for corruption: bureaucratic
94 discretionary power, the association of this power with economic rents, and deterrence as a function of the
95 probability of being caught and penalized. According to ‘Fraud Triangle’ theory, corruption opportunity,
96 need or pressure and rationalization are the three legs of corruption in the tendering and bidding process.
97 Corruption opportunity acts like a magnet to attract parties with the potential capacity to engage in corrupt
98 activities (Bowen et al., 2012). For corruption need or pressure, there are two distinct forms: committed
99 knowingly and deliberately for personal or corporate gain, and committed reluctantly in the belief that it
100 is necessary to conduct these practices (GIACC and TI, 2008). Corruption rationalization is the
101 individuals’ attempt to justify past and future corrupt deeds to themselves and others, and alleviate their
102 moral anxiety via the fields of psychoanalysis and social psychology (Zyglidopoulos et al., 2009). In
103 addition, according to the decision making process, the illegal practice may be as a result of internal
104 factors, external factors, situational factors, etc. (Zarkada-Fraser and Skitmore, 2000, Zarkada-Fraser,
105 2000).

106 Empirically, many causes of corruption have been identified in the construction sector, including
107 deregulation of the infrastructure sector, large flow of public money, fierce competition, lack of
108 transparent selection criteria for projects, political interference and discretion, the monopolistic nature of
109 service delivery, tight margins, close relationships between contractors and the complexity of institutional
110 roles (PricewaterhouseCoopers, 2003, Rodriguez et al., 2005, Stansbury and Stansbury, 2007, de Jong et
111 al., 2009, Sohail and Cavill, 2008, Gunduz and Önder, 2013). Moreover, the nature of construction
112 projects, such as their complex contractual structure, diversity of skills, and the numerous levels of
113 bureaucracy for obtaining official approvals and permits, facilitates corruption and makes it difficult to
114 detect and prevent (Stansbury and Stansbury, 2006, Fukuyama, 2005, Krishnan, 2009).

115 In China, there are additional causes due to its unique condition: its construction market is imperfect with
116 much trade monopoly and regional protectionism; government officials interfere in public construction
117 projects without constraint (Ren and Sun, 2005); and the construction market has a flawed regulation
118 system and lacks a positive industrial climate (Le et al., 2014a).

119 Furthermore, corruption is often viewed as a cultural problem, especially in developing countries (Sohail
120 and Cavill, 2008). In China, *guanxi*, the informal personal relationships that facilitate the exchange of
121 favors between people (Bian, 1997, Lovett et al., 1999, Leung et al., 2005), is embedded deeply in the
122 culture (Li and Sheng, 2011). Guanxi is the key to analyzing and understanding Chinese conduct, and
123 provides a “lubricant”(Standifird and Marshall, 2000, Hui and Graen, 1998, Gold and Guthrie, 2002) that
124 helps the Chinese to get through life, even called “guanxi capitalism” (Lu et al., 2008). However, like two
125 sides of a coin, guanxi has its good points and bad points (Warren et al., 2004), many scholars equate
126 guanxi with corruption and bribery (Koo and Obst, 1995, Smeltzer and Jennings, 1998, Steidlmeier,
127 1999), even taking guanxi to be synonymous with bureaucratic corruption and bribery (Sanyal, 2005, Su
128 and Littlefield, 2001, Su et al., 2003).

129 Thus, having good *guanxi* with government officials means being prioritized to win projects because
 130 good *guanxi* simply indicates that the government trusts you have the ability to accomplish the task (Guo
 131 and Miller, 2010). Resorting to *guanxi* to win construction projects has become a latent rule in China (Ren,
 132 2012). Consequently, *guanxi* provides a fertile environment for corruption to flourish (Hoskisson et al.,
 133 2000, Tsui et al., 2004).

134 As shown in Table 1, a total of 15 root causes of construction corruption have been identified from the
 135 literature review, including legal and regulation factors, market factors, project factors and personal
 136 factors.

137

138 Table 1 Causes of corruption in construction projects

Causes	Bowen et al. (2012)	Zarkada-Fraser and Skitmore (2000), (Zarkada-Fraser, 2000)	Le et al. (2014a)	Sohail and Cavill (2008)	Zou (2006)	(Zhang et al., 2015)
1 Flawed regulation system	X	X	X	X	X	X
2 Regional protectionism	—	—	—	—	—	X
3 Abuse of power	X	—	—	X	X	—
4 Absence of penalties	—	X	—	—	—	—
5 Lack of rigorous supervision	—	—	X	—	X	—
6 Lack positive climate	X	X	X	—	X	—
7 Lack of transparency	—	—	—	X	—	—
8 Fierce competition	—	X	X	—	—	X
9 Complex market	—	—	—	X	X	—
10 Large flow of public money	—	—	—	X	—	—
11 high margin	—	—	—	—	—	X
12 Economic survival	X	—	—	—	—	X
13 Personal greed(moral)	X	X	X	—	X	—
14 Professional code	—	X	X	X	X	—
15 Relationship/guanxi influence	X	—	—	X	—	X

139

140 Although various causes of corruption in construction have been identified, very limited focus on B2G
141 corruptions specifically. Additionally, previous research regarding corruption in the construction sector
142 has primarily focused on the whole construction industry, few studies have been attempted in the
143 tendering and bidding process (Zhang et al., 2015). Therefore, causes of B2G corruption in tendering and
144 bidding process remain largely unknown. Given that B2G corruption in the tendering and bidding stage
145 has a severe negative impact on the effectiveness of government investment and quality of construction
146 projects along with the unique legal, cultural and economic system in China, the underlying reasons for
147 B2G corruption in tendering and bidding stages need further investigation.

148 **RESEARCH METHODS**

149 The research process consisted of three steps. First, a thorough literature review to identify a preliminary
150 list of 15 causes of corruption in construction. Second, the use of semi-structured interviews with
151 experienced practitioners to identify further causes specifically for B2G corruption in the tendering and
152 bidding stages. Finally, a questionnaire survey is described to prioritize and categorize these causes.

153 To ensure the reliability of interview result, semi-structured interviews were conducted with practitioners:
154 (1) have at least ten years of working experience in the construction sector, (2) hold senior positions in
155 their organizations and (3) have high education degrees. As a result, 9 practitioners were selected
156 comprising 2 construction company CEOs, 3 vice CEOs and 4 project managers, all of whom have more
157 than ten years working experience in the construction sector and involved in the tendering and bidding
158 activities in numerous public construction projects. The reason for the combination of experts from
159 different backgrounds is to provide a balanced view of the research topic and obtain a range of
160 perspectives from different firms. Given that the majority of the literature on corruption is focused on the
161 recipients (government officials), this study examines the issue from the bribe-givers' (construction firms)

162 point of view (Gao, 2011, Li and Ouyang, 2007). Each semi-structured interview took approximately half
163 an hour. The 15 causes of B2G corruption were presented to the interviewees at the beginning of the
164 interviews and, using these as a reference, they were requested to identify the causes of B2G corruption
165 according to their own experience. After the interviews, content analysis was used to analyze the
166 transcripts and identify the causes of B2G corruption. Content analysis is often used to determine the
167 major facets of a set of data by simply counting the number of times an activity happens or a topic is
168 depicted (Ye et al., 2014, Fellows and Liu, 2009, Xia and Chan, 2012). As a result, a total of 24 causes of
169 B2G corruption in the tendering and bidding process were identified.

170 For the survey, a questionnaire was developed based on the 24 causes of B2G corruption identified from
171 the semi-structured interviews, with the respondents being requested to rate the importance of each cause
172 on a 7-point Likert-type scale (1=significant unimportant, 7=significant important). In order to maximize
173 the number of respondents, help was sought from the Shanghai Construction Consultants Association and
174 Research Institute of Complex Engineering and Management at Tongji University. These two agencies
175 have extensive contacts with various construction enterprises. In order to ensure the quality of the survey
176 results, all the targeted respondents and their enterprises had been involved in a number of public
177 construction projects in the past three years. Considering that corruption is a sensitive topic and it is
178 extremely difficult to obtain data from government officials, the target respondents in this research are
179 those from construction enterprises. A total of 211 questionnaires were distributed by e-mail and on-site
180 distribution over a period of 3 months. 183 were returned, of which 41 were discarded due to incomplete
181 information or obvious contradictions, e.g. the respondents thought it was difficult to understand the
182 questionnaire or ticked the same option in all questions (Fang et al., 2006). The remaining 142 valid
183 replies were recorded and used for the analysis. With a response rate of 67%, this satisfies the statistical
184 significance requirements for the survey (Baruch and Holtom, 2008).

185 For the analysis, each cause is ranked according to its mean value and the set of most important causes
 186 identified by t-tests. Then a factor analysis is conducted to explore the underlying dimensions involved.
 187 Factor analysis is a statistical technique commonly adopted to identify a small number of individual
 188 factors beneath a set of interrelated variables (Choi et al., 2011). Exploratory factor analysis (EFA) was
 189 used to identify the interrelationships between the items by the principal components method (Polit and
 190 Beck, 2008). This considers the total variance in the data and determines the minimum number of factors
 191 that account for the maximum variance in the dataset (Xia and Chan, 2012). This requires two essential
 192 stages of factor extraction and factor rotation. In order to test whether the data is suitable for factor
 193 analysis, Kaiser-Meyer-Olkin (KMO) and Bartlett's Test are first used. The KMO is an index for
 194 comparing whether the magnitudes of the observed correlation coefficients to the size of the partial
 195 correlation coefficients are small. The Bartlett's Test is for homogeneity of variance, a necessary
 196 condition for factor analysis.

197 **EMPIRICAL RESULTS AND DATA ANALYSIS**

198 **Semi-structured interviews**

199 Table 2 summarizes the background of the experts involved in the semi-structured interviews, and the
 200 identified 24 causes are shown in Table 3.

201 Table 2. Background of experts

Experts	Organization	Position	Years of experience
A	Contractor	CEO	23
B	Consultant	CEO	17
C	Contractor	Vice CEO	11
D	Contractor	Vice CEO	13
E	Consultant	Vice CEO	12
F	Contractor	Project Manager	10

G	Contractor	Project Manager	36
H	Consultant	Project Manager	25
I	Consultant	Project Manager	11

202

203

Table 3. Summary of causes of B2G corruption in tendering and bidding process

Number	Causes of B2G corruption in tendering and bidding
1	Higher margin for public investment projects
2	Investment fund is enough and can easily be paid for public investment projects
3	Cost of B2G corruption is small compared with its benefit
4	Long term benefits could not be achieved without B2G corruption
5	Tendering and bidding activities are often formalities
6	Reducing risk of the market and competition
7	Lack of a B2G corruption relationship disadvantages companies in competition
8	Decision-making for public investment projects is defective
9	Lack of standardization of government power
10	Tendering and bidding legal system is not sound
11	Government official power is over centralized
12	Tendering and bidding activities lack social supervision
13	Lack of effective judicial administration
14	Tendering and bidding information not disclosed effectively and lack transparency
15	Cut-throat competition to win construction projects is widespread
16	Existing monopoly and market segmentation in the tendering and bidding process
17	Rent-cost is too low
18	It is hard to discover a B2G corruption relationship owing to its hidden nature
19	B2G corruption can be conducted with the excuse of traditional culture and <i>guanxi</i>
20	It is hard to win construction projects by strict compliance with the law
21	Existing large numbers of off-site activities in the tendering and bidding process
22	Lack of trust in the construction sector
23	Lack of professional ethics
24	Lack of specific ethics and code of conduct to guide the action of government officials

204

205

206 **Questionnaire survey**

207 Table 4 provides detailed background information of the 142 respondents. All are from cities in eastern
208 China, which contributes almost 40% of construction projects in the country (China Statistics Bureau,
209 2013). 90% of respondents hold a college degree or above, 40% have more than 10 years' experience, and
210 approximately 40% hold managerial positions, which is sufficient to obtain a sound judgment.

211

212 Table 4. Demographic Profile of Respondents

Personal profile	Categories	Number of respondents	Percentage
Years of experience	1-5 years	39	27.5
	5-10 years	45	31.7
	10-15 years	30	21.1
	Over 15 years	28	19.7
Position	Staff	88	62
	Project manager level	32	22.5
	Department manager level	11	7.7
	Top Manager level	11	7.7
Education	High school or below	28	9.9
	Junior college	58	29.6
	Bachelor's degree	42	40.8
	Master's degree or over	14	19.7
Organization	Contractor	31	21.8
	Quantity survey	13	9.2
	Supervision	42	29.6
	Consultant	56	39.4
Ownership	Private enterprises	116	81.7
	State-owned enterprises	20	14.1
	Foreign companies	4	2.8
	Joint enterprises	2	1.4

213

214 **Ranking of corruption causes**

215 Cronbach's alpha is 0.936, much greater than the cut-off of 0.6 (Carmines and Zeller, 1979), indicating
 216 the reliability of seven-point Likert-type scores is acceptable. The mean and standard deviation of the
 217 importance of each ranked cause are shown in Table 5. When two or more causes have the same mean
 218 value, the one with the lower standard deviation is considered to be more important (Wang and Yuan,
 219 2011). The mean scores of all the causes are over 5.0, indicating that all the causes are considered
 220 important.

221

222

Table 5. Ranking of Causes of B2G corruption

Causes of B2G corruption	Mean	Std. Deviation
1. Lack of a B2G corruption relationship disadvantages companies in competition	5.803	1.119
2. Existing large numbers of off-site activities in the tendering and bidding process	5.746	1.133
3. Government official power is over centralized	5.739	1.122
4. Investment fund is enough and can easily be paid for public investment projects	5.718	1.006
5. Lack of effective judicial administration	5.718	1.181
6. It is hard to discover a B2G corruption relationship owing to its hidden nature	5.711	1.069
7. Rent-cost is too low	5.662	1.058
8. Reducing risk of the market and competition	5.641	1.100
9. Tendering and bidding activities lack social supervision	5.627	1.218
10. Lack of specific ethics and code of conduct to guide the action of government officials	5.592	1.295
11. Long term benefits could not be achieved without B2G corruption	5.556	1.164
12. B2G corruption can be conducted with the excuse of traditional culture and <i>guanxi</i>	5.549	1.102
13. It is hard to win construction projects by strict compliance with the law	5.500	1.213
14. Cut-throat competition to win construction projects is widespread	5.415	1.106
15. Existing monopoly and market segmentation in the tendering and bidding process	5.408	1.162
16. Lack of standardization for government power	5.380	1.281
17. Higher margin for public investment projects	5.345	1.130
18. Tendering and bidding legal system is not sound	5.324	1.345
19. Cost of B2G corruption is small compared with its benefit	5.310	1.118
20. Decision-making for public investment projects is defective	5.268	1.231
21. Lack of trust in the construction sector	5.254	1.274
22. Tendering and bidding activities are often formalities	5.246	1.267
23. Lack of professional ethics	5.225	1.431
24. Tendering and bidding information not disclosed effectively and lack transparency	5.056	1.341

223

224 A series of t-tests helps to find the set of most important causes. For the top and second top means of
225 5.803 and 5.746, the t-test (one-tailed) $p=0.274$. Now take the top and third top and continue in this way
226 until $p<0.05$. This occurs at cause number 8, therefore the set of most important causes comprises the first
227 7 causes on the list. That is

- 228 1. Lack of a B2G corruption relationship disadvantages companies in competition
- 229 2. Existing large numbers of off-site activities in the tendering and bidding process
- 230 3. Government official power is over centralized
- 231 4. Investment fund is enough and can easily be paid for public investment projects
- 232 5. Lack of effective judicial administration
- 233 6. It is hard to discover a B2G corruption relationship owing to its hidden nature
- 234 7. Rent-cost is too low

235 The importance of the first of these causes is unsurprising as it is well known that corruption in the
236 Chinese construction sector is almost out of control (Zou et al., 2007), which leads to a severe external
237 industry environment for construction enterprises. In order to survive and develop, enterprises are forced
238 to indulge in corrupt activities with government officials. Some directly depend on B2G corruption to win
239 construction projects. In this way, the industrial climate of the whole construction sector has gradually
240 become less positive (Le et al., 2014a), so that construction enterprises have increasingly resorted to B2G
241 corruption, as the lack of a B2G corruption relationship disadvantages companies in competition. In this
242 situation, tendering and bidding laws cannot be successfully implemented and winning construction
243 projects by B2G corruption has become the latent rule.

244 The remaining causes refer to the ease of which corrupt activities are possible in China. Due to the whole
245 tendering and bidding process involving many off-site activities, corruption activities are carried out

246 through a B2G corruption relationship in advance, with the tendering and bidding process being merely a
247 formality. Government officials, possessing a powerful right of discretion in China, still play an important
248 role in the tendering and bidding process. This, together with the lack of judicial administration and
249 difficulty in detection makes corruption relatively easy. Similarly, the cost of corruption compared with
250 the size of profit involved is relatively small.

251 Therefore, the ease with which corrupt activities can be carried out because of off-site activities, overly
252 powerful officials, lack of judicial administration, difficulty in detection and relatively low cost, and its
253 ratchet effect on the whole industry making it difficult to win construction projects without B2G
254 corruption are the main causes of corruption in construction tendering and bidding in China.

255

256 **Factor Analysis of Underlying Groupings**

257 Table 6 presents the results for the KMO and Bartlett's tests, with a KMO value of 0.901 and Bartlett's
258 significance of 0.000. According to Kaiser (1974), the KMO index value should be bigger than 0.5. It is
259 therefore concluded that the correlation matrix is not an identity matrix, the correlation among the
260 variables is strong, the variances are sufficiently homogeneous and hence the data is suitable for factor
261 analysis.

262

Table 6. Results of KMO and Bartlett's Test

Parameter	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.901
Bartlett's Test of Sphericity	
<i>Approx. Chi-Square</i>	2008.338
<i>Degrees of freedom</i>	276
<i>Sig.</i>	0.000

263 Using the principle components analysis and varimax methods, the factor analysis generates six factors
 264 with eigenvalues greater than 1.0, accounting for 70.54% of total variance explained, which satisfies the
 265 criteria that the eigenvalues should be greater than 1.0 and more than 60% of total variance should be
 266 explained (Norusis, 1992, Malhotra, 2008). To obtain a better understanding of the factor-loading matrix,
 267 factor rotation is used, and the factor loadings are sorted by size according to their coefficients. Table 6
 268 indicates the final factors and factor loadings. Each factor is named by the combining the meaning of their
 269 variables with the highest cross-factor loadings, and eliminated those with loadings less than 0.4 (Lee et
 270 al., 2004). These are (1) flawed regulation systems, (2) negative encouragement, (3) lack of professional
 271 ethics and codes of conduct, (4) illegitimate gains, (5) lack of competitive and inequitable bidding
 272 practices and (6) the *guanxi* mechanism.

273 Table 7. Causal factors of B2G corruption

Factors	Factor loading	Variance explained (%)
<i>Factor 1: Flawed regulation systems</i>		14.114
Lack of effective judicial administration	0.808	
Government official power is over centralized	0.730	
Tendering and bidding activities lack social supervision	0.692	
Tendering and bidding legal system is not sound	0.675	
Decision-making for public investment projects is defective	0.473	
Lack of standardization of government power	0.447	
<i>Factor 2: Negative encouragement</i>		12.658
It is hard to win construction projects by strict compliance with the law	0.722	
Lack of a B2G corruption relationship disadvantages companies in competition	0.655	
Existing large numbers of off-site activities in the tendering and bidding process	0.631	
Long term benefits could not be achieved without B2G corruption	0.546	
Tendering and bidding activities are often formalities	0.523	
<i>Factor 3: Lack of professional ethics and code of conduct</i>		12.195
Lack of professional ethics	0.866	
Lack of trust in the construction sector	0.806	
Lack of specific ethics and code of conduct to guide the action of government officials	0.708	
<i>Factor 4: Illegitimate gain</i>		12.171
Higher margin for public investment projects	0.805	
Cost of B2G corruption is small compared with its benefit	0.763	

Investment fund is enough and can easily be paid for public investment projects	0.750	
Reducing risk of the market and competition	0.608	
<i>Factor 5: Lack of competitive and inequitable bidding practices</i>		11.174
Tendering and bidding information not disclosed effectively and lack transparency	0.810	
Existing monopoly and market segmentation in the tendering and bidding process	0.647	
Rent-cost is too low	0.615	
Cut-throat competition to win construction projects is widespread	0.578	
<i>Factor 6: The guanxi mechanism</i>		8.233
B2G corruption can be conducted with the excuse of traditional culture and <i>guanxi</i>	0.714	
It is hard to discover a B2G corruption relationship owing to its hidden nature	0.679	

274

275 **DISCUSSION OF FACTOR ANALYSIS RESULTS**

276 ***Factor 1: Flawed Regulation Systems***

277 The factor of ‘flawed regulation systems’ accounts for 14.11% of the total variance explained. This
 278 confirms the conclusion that flawed regulation systems are the main reason for B2G corruption in the
 279 tendering and bidding process (Le et al., 2014a). As Kagan (1989) indicates, the regulations themselves
 280 are substantively problematic and flawed products for the behavior of corruption, fraud, etc. In China,
 281 although the government has actively implemented more than a thousand anti-corruption regulations and
 282 laws, and increasingly competitive and formal market-supporting institutions have been gradually adopted,
 283 anti-corruption laws and institutions are poorly established (Ko and Weng, 2012, Chen and Wu, 2011).
 284 Regulations remain undeveloped and flawed.

285 In the construction sector, the vague and ambiguous laws and regulations provide wide discretion in
 286 interpreting the meanings of current laws and regulations (YOW THIM and Zonggui, 2004). Government
 287 construction departments play multiple roles of policy makers, project funding owners and arrangers, and
 288 own discretionary power, making it easy for government officials to interfere in tendering and bidding
 289 activities. Lack of rigorous supervision aggravates the situation (Ko and Weng, 2011, Li et al., 2013). The
 290 departments supervising construction projects are sometimes a subsidiary body of the same departments

291 that administrate the tendering department. At the same time, transparency to the public, such as public
292 media, should be improved and enhanced (Zou, 2006). Additionally, although China's tendering and
293 bidding laws have been in existence since only 2000, they still contain many deficiencies that have a
294 weakening influence on anti-corruption as they are flexible and fragmented. It is therefore vital and urgent
295 to develop more sophisticated and enforceable laws and regulations (YOW THIM and Zonggui, 2004).

296

297 ***Factor 2: Negative Encouragement***

298 B2G corruption is a passive response to the challenges raised by the changing economic and legal
299 environment in China (Huang and Rice, 2012). B2G corruption is becoming the norm for winning public
300 construction projects (Zhang et al., 2015). There are many sources of corruption in China, such as the
301 ambiguity of prequalifying criteria, owners' deliberately splitting the larger projects into smaller ones, bid
302 rigging, etc. In this situation, construction enterprises resort to bribing government officials in order to
303 win the projects. In other words, B2G corruption is developed as a defensive approach to curb the lack of
304 a positive industrial climate (Le et al., 2014a). Furthermore, it has become more attractive for firms to
305 resort to establishing B2G corruption relationships for long-term benefits (Luo, 2004) as establishing and
306 maintaining B2G *guanxi* costs a large amount of money and energy (Zhang et al., 2015). Additionally,
307 given that corruption is widespread in China, not having B2G corruption relationships leads to a
308 contractor being competitively disadvantaged. As a result, construction enterprises tend to strengthen their
309 B2G corruption relationships in defense.

310 ***Factor 3: Lack of Professional Ethics and Code of Conduct***

311 As Bowen et al. (2007) point out, the disparate nature of the construction industry makes it difficult to
312 monitor behavior on an individual level, which makes the introduction of codes of practice seem to be the
313 best way to bring about a change in practice. There are three distinct parts to the effective use of a code of
314 conduct as a tool for dealing with corruption: drafting the code, implementing the code and enforcing the
315 code (Gilman, 2005). However for government officials in China, there is still a lack of a clear code of
316 conduct (Liu, 2008). In addition, the existing codes needs to be improved because they fail to be put into
317 practice, meanwhile creating cognitive dissonance and corruption (Li, 2011a). Moreover, corrupt
318 behavior is an ethical problem (Sohail and Cavill, 2008) and the lack of professional ethics leads to the
319 spread of corruption (Zou, 2006). Li (2009), for example, found that engineering students receive little
320 professional ethics education, leading to a lack of trustworthiness and responsibility. Furthermore, low
321 levels of trust nurture corruption, which often creates a degree of tolerance toward corruption and
322 nurturing expectations of such conduct. At the same time, distrust fosters a vicious circle of a tolerant or
323 acquiescent attitude toward corruption (Morris and Klesner, 2010), elevating the amount of corruption in
324 society and hence providing a justification for furthering such behavior (Xin and Rudel, 2004).

325 ***Factor 4: Illegitimate Gain***

326 The motivation of corruption during the tendering process is to influence decision makers to favor
327 individual contractor's own benefits, including the *ex-ante* benefits and *ex post* benefits (Cheung et al.,
328 2011). The *ex-ante* benefit is that enterprises win construction projects. And by *ex-ante* corruption, the
329 number of bidders can be reduced (Tullock, 2001). Of B2G corruption practices, government officials
330 abuse their administration power to appoint bidders. In reality, many enterprises in China undertake
331 construction projects beyond their capabilities by borrowing qualifications, obtaining projects without a
332 tendering and bidding process, etc. (Zhao, 2011). For *ex post* benefits, corruption can bring outstanding
333 benefits. It is stated that the net benefit from public investment projects is more over 20%, sometimes

334 even more than 50% (Liu, 2011), while the average for the whole construction sector about 3% (!!!
335 INVALID CITATION !!!). Furthermore, only 70% to 80% of construction enterprises obtain their
336 private sector construction project payments (Zhang (2013). Therefore, as the profit for public
337 construction projects is high and payments are guaranteed by government, legions of construction
338 enterprises try to win these projects via B2G corruption.

339 ***Factor 5: Lack of Competitive and Equitable Bidding Practices***

340 Stansbury and Stansbury (2006) indicates that greater transparency increases the difficulty in concealing
341 corruption. The construction sector is a typical market with incomplete information due to the opaqueness
342 of bidding information. In China, there is serious information asymmetry, such as irregular publishing of
343 information, little information being released, and insufficient transparency in selection criteria, that is
344 although there are rules and requirements on qualification examination content, bidding scoring method
345 and rubric according to the tendering and bidding laws, almost 90 percent tender documents did not
346 detail the corresponding contents (LE et al., 2014c).

347 In this situation, disclosure of confidential information can create space for rent seeking and bring
348 benefits for government officials. The rent cost for both government officials and construction enterprises
349 is low, which can induce unfair practices and injustice for other disadvantaged groups. Furthermore, due
350 to the great financial and tax contributions involved, local protectionism in the construction sector is
351 rampant (Fan, 2012). According to a survey conducted by the Development Research Center of the State
352 Council of China, construction sector local protectionism is ranked fourth of 36 industrial sectors (Li et al.,
353 2004). In this situation, local construction enterprises are sheltered from other external enterprises and
354 compete unfairly. Thus, external enterprises have to depend on B2G corruption to overcome entry barriers
355 to enter the regional market. Furthermore, in order to sustain their competitive advantage and extract

356 more rents from the regional market, the local enterprises also have to indulge in corrupt practices with
357 government officials. Because of the lack of transparency and competition due to protectionism, its value
358 and control by government officials is increasing (Ades and Tella, 1996).

359 ***Factor 6: the Guanxi Mechanism***

360 Chinese *guan* is a cultural value acceptable in the Chinese market, and its abuse can lead to unethical
361 practices, such as dishonesty, bribery, and corruption (Maximiano, 2007). Thus *guanxi* provides fertile
362 soil in China for corruption to flourish (Hoskisson et al., 2000, Tsui et al., 2004). Firstly, *guanxi* is covert
363 by nature. Utilizing the social institutions of reciprocity and custom of gift-giving via *guanxi*, the process
364 of corruption serves as a tacit expression (Li, 2011b) to reduce the risks involved. Secondly, *guanxi* is a
365 Chinese tradition, which can distort norms by falsely presenting certain illicit behaviors as standard and
366 normatively acceptable practices. In this situation, B2G corruption is not some haphazard aggregation of
367 sporadic acts, but follows certain rules and codes of conduct (Zhan, 2012). Therefore, *guanxi* helps to
368 overcome the moral and cognitive barriers to corruption (Li, 2011b).

369 **CONCLUSIONS**

370 The focal point of this study is to understand the underlying influences on B2G corruption in tendering
371 and bidding in China. In order to win construction projects, many bidders establish a variety of B2G
372 corruption relationships with government officials. However, little is known of their causes. In this study,
373 a total of 24 factors were identified through a combination of literature review and semi-structured
374 interviews. Based on a survey of 142 Chinese construction industry practitioners, six underlying factors
375 were revealed using factor analysis approach, comprising: ‘flawed regulation systems’, ‘negative

376 encouragement', 'lack of professional ethics and codes of conduct', 'illegitimate gains', 'lack of
377 competitive and inequitable bidding practices' and 'the *guanxi* mechanism'.

378 The findings of the study provide some practical implications for preventing B2G corruptions in
379 developing countries. The main factor is the ease with which B2G corruption is possible in China. To
380 correct this, as it is the flawed regulation system that has the biggest impact on B2G corruption, priority
381 needs to be given to improvements in the tendering and bidding environment, including revising the
382 tendering and bidding laws, strengthening supervision, increasing penalties and greater policing of the
383 laws and regulations. Another important factor for anti B2G corruption is to establish and improve a
384 unified and orderly national construction market system for fair competition, so each bidder wins
385 construction projects on merit only.

386 The findings of this study imply that the causes of B2G corruption in tendering and bidding are quite
387 complicated and varied. Many causes identified, such as flawed regulation systems, lack of professional
388 ethics and codes of conduct and lack of competitive and equitable bidding practices are common in other
389 developing nations and likely to have equal emphasis. The influence of the *guanxi* mechanism is unique
390 to China, however, and is needed to explore its role in B2G corruption to provide additional help in
391 further understanding the causes of B2G corruption in China and develop the improved effectiveness of
392 anticorruption measures.

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398

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