Enhancing Value for Money in Public Private Partnership Projects – Findings from a Survey Conducted in Hong Kong, Australia Compared to Findings from Previous Research in the United Kingdom

Esther Cheung[1], Albert P.C. Chan[2] and Stephen Kajewski[3]

* Corresponding author
[1] PhD Candidate, School of Urban Development, Built Environment and Engineering, Queensland University of Technology, Australia. Tel: (852) 2766 4309; Fax: (852) 2764 5131; E-mail: bsesther@polyu.edu.hk
[2] Adjunct Professor, School of Urban Development, Built Environment and Engineering, Queensland University of Technology, Australia. E-mail: bsachan@polyu.edu.hk
[3] Professor and Head, School of Urban Development, Built Environment and Engineering, Queensland University of Technology, Australia. E-mail: s.kajewski@qut.edu.au

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Abstract

This paper studies the measures that enhance Value for Money (VFM) in PPP projects from the findings achieved in a questionnaire survey. The questionnaire survey was conducted in Hong Kong (also known as the Hong Kong Special Administrative Region) and Australia, and is compared to the results conducted by other researchers (Li, 2003) in the United Kingdom. Respondents were asked to rate eighteen VFM measures in PPP projects. The results found that the top five VFM measures ranked by the respondents from Hong Kong included (1) Efficient risk allocation (allocating the risk to the party best able to manage it); (2) Output based specification; (3) Competitive tender; (4) Private management skill; and (5) Private sector technical innovation. The first and second of these VFM measures were also found to be ranked high by the respondents from Australia and the United Kingdom, indicating that these were true for these jurisdictions. When the risks are handled well less pitfalls are experienced and as a result VFM is more achievable. Hence an efficient risk allocation is vital in determining whether VFM can be achieved in PPP projects. A clear output based specification can enable a more obvious project design and concept hence minimizing the possibility of delivering the wrong product for the user. Therefore this measure is also important in determining whether VFM has been achieved for a PPP venture. Despite the interest in PPP, there is need for more systematic and in-depth research to examine the measures that enhance VFM in PPP projects in Hong Kong. In addition this project also forms a comparative study for the use of PPP in Hong Kong, Australia and The United Kingdom.

Keywords: Hong Kong, Australia, Public Private Partnership (PPP), Value for Money (VFM), Procurement.

1. Introduction

Since the revert of sovereignty of Hong Kong from the British to the Chinese, Hong Kong has experienced many difficulties with adjustment to the new government. These political differences have put pressure on the local government's budget. With the continuous cry for better public services due to the rapid development of Hong Kong, alternatives need to be sought. Hong Kong has the advantage of being the international gateway to China, and with this benefit has attracted companies to base their offices in Hong Kong for the Asia market. As a result the private sector has much to contribute. Local practitioners have also shown a strong interest in being involved in PPP projects. It has been seen from overseas experiences that the private sector will also benefit in terms of financial profits from large scale projects which could only be possible under this type of procurement method. Previous projects in Hong Kong have been known to utilize similar approaches to PPP. The local government has realized the benefits of using PPP in Hong Kong as well as the success achieved overseas. But more thorough research is needed to investigate the practice most appropriate for Hong Kong. PPP are

collaborations in which the public and private sectors both bring their complementary skills to a project, with different levels of involvement and responsibility, for the sake of providing public services more efficiently (Efficiency Unit, 2003a). The PPP form of procurement is recognized as an effective way of delivering VFM in public infrastructure projects or services. This paper therefore looks at the measures that could enhance VFM in PPP projects from the findings of a survey conducted in Hong Kong, Australia and the United Kingdom. The findings presented in this paper are part of a larger research project looking at developing a best practice framework for implementing PPP projects in Hong Kong. The specific objectives of the study include:

a. Identify the benefits, difficulties and critical success factors of PPP.
b. Measure the effectiveness of PPP against other procurement methods.
c. Identify representative case studies from countries such as Australia for analysis to identify their approach to success/failure.
d. Identify previous projects in Hong Kong that utilized a similar approach to PPP and to analyze their implementation successfulness.
e. Investigate the best conditions in terms of project nature, project complexity, project types and project scales under which the use of PPP is the most appropriate.

2. Literature review on Value for Money in PPP projects

One of the main reasons that projects are procured by PPP is to enhance VFM by inviting the private sector to handle public works projects. As a result there has been much literature on how VFM in PPP projects can be achieved. This section reports only a few examples of how VFM can be achieved in PPP projects.

VFM, defined by Grimsey and Lewis (2004) as the optimum combination of whole life cycle costs, risks, completion time and quality in order to meet public requirements, is another important consideration when deciding whether to proceed with the PPP option, especially for the public sector (Chan et al., 2006; Boussabaine, 2007; Li et al., 2005; Li, 2003; Efficiency Unit, 2003a; Ingall, 1997; New South Wales Government, 2006; European Commission Directorate, 2003; Efficiency Unit, 2002). Previously the Public Sector Comparator (PSC) has been the most common tool used by the public sector to show how much it would cost the Government to build the asset through public funding, which is then used to compare with how much it would cost to build it as a PPP (Farrah, 2007). In the case of University College London Hospital Redevelopment in the United Kingdom, the PPP option cost 6.7% less than the Public Sector Comparator, while maintaining the same output and user requirements as demanded (Efficiency Unit, 2003b).

In 2006, the HM Treasury (2006) of the United Kingdom published a new guideline titled “Value for Money Assessment Guidance”. In this guideline the PSC has been replaced by the Outline Business Case (OBC). The target audience of this guideline is for departments and authorities who are considering adopting PPP projects. The guideline explains that there are three stages to assess VFM for the potential projects. These stages include the Programme Level Assessment, the project Level Assessment and the

Procurement Level Assessment. The first stage looks at whether the use of PPP is appropriate for the potential project and also whether VFM could be achieved. The second stage requires OBC, which has become the replacement for the previous PSC. The functions of both are similar in that the key aspects of VFM are identified. The third and final stage is an ongoing assessment of the procurement process.

Cost savings refer to the reduction in price as a result of delivering a project by PPP instead of traditional methods. The saving could be a result of the private sector's innovation and efficiency which the public sector may not achieve (Corbett and Smith, 2006; Environment, Transport and Works Bureau, 2004; Grimsey and Lewis, 2004; Akintoye et al., 2003; Li et al., 2005; So et al., 2007, Li, 2003; Efficiency Unit, 2003a; European Commission Directorate, 2003; United Nations Economic Commission for Europe, 2004; British Columbia, 1999). Private sector generally achieves higher operational efficiency in asset procurement and service delivery by applying their expertise, experience, innovative ideas/technology (e.g. using durable materials to reduce future maintenance cost) and continuous improvements. Overall cost savings to the project can be achieved by striving for the lowest possible total life cycle costs while maximizing profits.

A transparent and efficient procurement process is essential in lowering the transaction costs and shortening the time in negotiation and completing the deal. Clear project brief and client requirements should help to achieve these in the bidding process. In most cases, competitive bidding solely on price may not help to secure a strong private consortium and obtain VFM for the public. The government should take a long-term view in seeking the right partner (Corbett and Smith, 2006; Gentry and Fernandez, 1997; Jefferies et al., 2002; Jefferies, 2006; Li et al., 2005; Qiao et al., 2001; Zhang, 2005).

PPP project arrangements are complex and involve many parties with conflicting objectives and interests. Hence, PPP projects often require extensive expertise input and high costs and take lengthy time in deal negotiation. The high transaction costs and lengthy time may not represent good value to all parties and as a result the deal may not materialize in the beginning or may falter in the end. PPP projects may incur higher transaction costs than those under the conventional public sector procurement. The legal and other advisory fees would be included as lawyers are involved in all stages of a PPP project, as well as the cost of private sector finance, and the price premium for single point responsibility arrangement. The potential high transaction costs may have a negative impact on the objective of securing the best value (Corbett and Smith 2006; Environment, Transport and Works Bureau 2004; Grimsey and Lewis, 2004; Li, 2003; Li et al., 2005; Merna and Owen, 1998; Zhang, 2001; Zhang and AbouRisk, 2006). Complex PPP projects require inputs from many parties of different expertise. Therefore, the projects should be economically viable to cover such costs.

3. Research methodology

3.1 Questionnaire template

The practitioners' views on VFM measures in PPP projects were solicited by way of a questionnaire survey. The questionnaire template designed by Li (2003) was adopted for this study. Although the authors could have developed their own research questionnaire, there were several advantages foreseeable to adopt Li's (2003) survey questionnaire rather than designing a new template. Firstly, the value of Li's (2003) questionnaire has already been recognized by the industry at large. His publications as a result of the research findings derived from the questionnaire are evidence of its worthiness. Secondly, there would be no added advantage to reinvent the work that has previously been done by other researchers. And thirdly by administering Li's (2003) questionnaire in different administrative systems, it would be of interest for comparison purposes in the future. Therefore Li's (2003) questionnaire was adopted for the survey as presented in this paper with prior permission obtained from the author Dr. Bing Li and his doctoral research supervisor, Prof. Akintola Akintoye who is currently the Head of the School of Built and Natural Environment, University of Central Lancashire, United Kingdom.

3.2 Collection of research data

An empirical questionnaire survey was undertaken in Hong Kong and Australia from October 2007 to December 2007 to analyze the VFM measures of adopting PPP. In this study, the target survey respondents of the questionnaire included all industrial practitioners from the public, private and other sectors. These respondents were requested to rate their degree of agreement against each of the identified VFM measures according to a five-point Likert scale (1 = Least Important and 5 = Most Important).

Target respondents were selected based on their direct hands-on involvement with PPP projects. Survey questionnaires were sent to 95 target respondents in Hong Kong and 80 target respondents in Australia. It was anticipated that some of these target respondents would have colleagues and personal connections knowledgeable in the area of PPP to participate in this research study as well; hence some of the respondents were dispatched five blank copies of the survey form. A total of 34 completed questionnaires from Hong Kong and 11 from Australia were returned representing response rates of 36% and 9%, respectively. The lower response rate achieved in Australia was expected as the questionnaire was administered from Hong Kong, hence geographical complications were perceived. But as this study mainly focuses on Hong Kong, the responses received from Australia were used for reference only, similarly so were the results from Li's survey (2003). It must be noted that the number of responses in Table 1 may not always be 34 for Hong Kong and 11 for Australia, as these respondents may not have ranked all the VFM measures. Also, Table 2 shows that only 32 and 7 responses in Hong Kong and Australia respectively were suitable for subsequent statistical analyses.

The questionnaire respondents comprised experienced practitioners from the industry. As shown in Figures 1 and 2 approximately half of the respondents in Hong Kong and Australia possessed twenty-one years or above of industrial experience. Figures 3 and 4 provide the breakdown of questionnaire respondents who have been involved with PPP projects. Given the few BOT / PPP projects conducted in Hong Kong, it was a surprise to find that approximately 40% of the respondents gained previous experience. Without

doubt some of these may have had experience with local BOT projects or PPP projects overseas, but still the experience of these respondents confirmed the quality of the responses from the survey conducted. In addition, amongst those respondents who have acquired experience with PPP projects, 10% had previously been involved with at least five projects. In Australia, many more PPP projects have been conducted so it was unsurprising to find that approximately 90% of the respondents have participated in PPP projects before, with two thirds of these respondents having participated with at least five PPP projects. Although not all of the respondents may have had hands on experience with PPP projects, the selected respondents were all practitioners that were involved with PPP in some way. Some of these were in the nature of research, others have participated in bidding for PPP projects, and some were preparing to involve with future PPP projects. Therefore their responses were believed to be as valuable as those respondents who have actual hands-on experience. Once again this reassures the value and reliability of the findings.

Insert FIGURE 1 here.

Insert FIGURE 2 here.

Insert FIGURE 3 here.

Insert FIGURE 4 here.

3.3 Tools for data analysis

3.3.1 Mean score ranking technique

Chan and Kumaraswamy (1996) adopted the 'mean score' method to establish the relative importance of causes of delay in building construction projects in Hong Kong as suggested by the clients, consultants and contractors. The data collected from the current questionnaire survey was also analyzed using the same technique, within various groups being categorized according to the origins of the respondents (i.e. Hong Kong and Australia). The five-point Likert scale (1 = Least Important and 5 = Most Important) as described previously was used to calculate the mean score for each VFM measure, which was then used to determine its relative ranking in descending order of importance. These rankings made it possible to triangulate the relative importance of the VFM measures to the respondents from Hong Kong, Australia and the United Kingdom as presented in Li's (2003) survey 2003 (the mean score method was also used in Li's (2003) analyses). The mean score (MS) for each VFM measure was computed by the following formula:

$$MS = \frac{\sum (f \times s)}{N}, (1 \le MS \le 5) \quad (1)$$

Where s = Score given to each VFM measure by the respondents, ranging from 1 to 5 (1 = Least Important and 5 = Most Important);
f = Frequency of each rating (1-5) for each VFM measure; and

N = Total number of responses concerning that VFM measure.

3.3.2 Kendall's concordance analysis

The survey respondents in this study were based on two groups: Hong Kong and Australia. Kendall's concordance analysis was conducted to measure the agreement of different respondents on their rankings of VFM measures based on mean values within a particular group. If the Kendall's coefficient of concordance (W) is significant at a pre-defined allowable significance level of, say 0.05, a reasonable degree of consensus amongst the respondents within the group on the rankings of VFM measures was indicated. The W for the VFM measures was calculated by the following formula (Siegel and Castellan, 1988):

$$W = \frac{\sum_{i=1}^{n} \left(\overline{R}_i - \overline{R}\right)^2}{n(n^2 - 1)/12} \qquad (2)$$

Where n = Number of VFM measures being ranked;

$\overline{R}_i$ = Average of the ranks assigned to the ith VFM measure; and

$\overline{R}$ = The average of the ranks assigned across all VFM measures.

According to Siegel and Castellan (1988), W is only suitable when the number of attributes is less than or equal to 7. If the number of attributes is greater than 7, chi-square is used as a near approximation instead. The critical value of chi-square is obtained by referring to the table of critical values of chi-square distribution, which can be found in Siegel and Castellan (1988).

4. Discussion of survey results

The VFM measures in PPP were assessed from different perspectives of the Hong Kong, Australia and the United Kingdom (results obtained by Li (2003) from his survey) respondent groups. The means for each administrative system were calculated and ranked in descending order of importance as shown in Table 1.

Insert TABLE 1 here.

4.1 Agreement of the survey respondents

As shown in Table 2, the Kendall's coefficient of concordance (W) for the rankings of VFM measures was 0.199 and 0.459 for Hong Kong and Australia respectively. The computed W's for both were significant with p = 0.000. As the number of attributes considered were above seven, as mentioned previously the Chi-square value would be referred to rather than the W value. According to the degree of freedom, the critical value of Chi-square was 27.590 for both groups (Hong Kong and Australia) the computed

Chi-square values were all above the critical value of Chi-square (108.189 and 54.567 respectively). Therefore the assessment by the respondents within each group on their rankings of VFM measures is proved to be consistent. This finding ensures that the completed questionnaires were valid for further analysis.

Insert TABLE 2 here.

4.2 Ranking of Value for Money measures in PPP

Eighteen VFM measures in PPP were rated by the respondents. Figure 5 illustrates the relationship of the top five VFM measures ranked in Hong Kong with their ranking positions in Australia and the United Kingdom. These VFM measures included:
(1) Efficient risk allocation (allocating the risk to the party best able to manage it);
(2) Output based specification;
(3) Competitive tender;
(4) Private management skill; and
(5) Private sector technical innovation.

The top VFM measure ranked by the Hong Kong respondents was 'Efficient risk allocation (allocating the risk to the party best able to manage it)'. This VFM measure was also ranked top by the Australians and highly at second place by the British, showing its importance in PPP projects for these jurisdictions. It is essential for the public client and the private bidders to evaluate all of the potential risks throughout the whole project life. Public and private sector bodies must place particular attention on the procurement process while negotiating contracts for PPP to ensure a fair risk allocation between them. Systematic risk management allows early detection of risks and encourages the PPP stakeholders to identify, analyze, quantify, and respond to the risks, as well as take measures to introduce risk mitigation policies (Akbiyikli and Eaton, 2004). A fundamental principle is that risks associated with the implementation and delivery of services should be allocated to the party best able to manage the risk in a cost effective manner.

Second in the Hong Kong and Australia rank was 'Output based specification'. This VFM measure was also ranked high by the British at fifth. Besides the top VFM measure ranked by Hong Kong discussed previously, this was the only one also ranked highly by all three administrative regions, indicating that this VFM measure is applicable to PPP projects for these jurisdictions. Clear specifications can be used to quantify the resources required for a project. When project specifications are more difficult to define the costs that it may incur are also hard to quantify and control. Therefore clearly defined output based specifications can help the government to monitor the private sector's performance. The private party can also feel more confident to achieve targets and keep control of the project flow in order to enhance their profit margins. Output based specifications can also help the government to use the public sector comparator more effectively in quantifying whether VFM is reached by procuring projects by PPP. Some may feel that output based specifications define too much of the project to allow for private sector

innovation, but for example a two lane tunnel can still leave plenty of room for added value from the private sector.

The Hong Kong respondents ranked 'Competitive tender' third. In Australia and the United Kingdom this VFM measure was ranked with medium importance only, both at sixth position. This VFM measure was ranked high in Hong Kong reflecting the respondents' views of the actual situation of procuring projects. Hong Kong has only a limited number of contractors who are able to handle large public works projects. Therefore it is often the same groups of contractors who are successful at winning these bids. For those slightly smaller local companies they are often unable to compete with the larger local companies. For international companies based in Hong Kong they may not always wish to spend their resources in Hong Kong. Hence a revolving situation has been formed that there are often few bids received from the private sector. As a result these projects tend to be awarded to the same groups of people. Therefore an evolving situation is that the fewer competitors in the tendering process the more difficult it is to achieve VFM in PPP projects. In a more competitive bidding environment the private sectors will try all measures to improve their designs in all aspects. In particular in terms of VFM as one of the main reasons that the public sector opt for PPP is to achieve VFM in public works projects. This would therefore be a key reason to choose a particular private party for the government. In a bidding environment that has few competitors the private sector does not need to try so hard to win the contracts, hence VFM may not always be achieved.

Ranked fourth in Hong Kong and Australia was 'Private management skill'. This VFM measure was ranked slightly lower by the British at seventh position. The British are more experienced in conducting PPP projects hence many of the private sector companies are already equipped with the necessary skills to handle PPP projects. On the other hand in Hong Kong in particular many private companies are not experienced with handling PPP projects and are therefore not equipped with the necessary management skills. The capability of the private sector can determine the successfulness of the PPP project. The success of a PPP project is often associated with its degree of VFM that can be achieved.

The fifth VFM measure in Hong Kong was 'Private sector technical innovation'. This was ranked slightly higher by the Australians but lower by the British at third and ninth position respectively. This VFM measure is similar to 'private management skill', in that it relies on the capability of the private party. Obviously the ability of the private party will determine the how successful the PPP project can become in terms of VFM. Then again VFM is the main incentive for governments around the world to involve the private sector in to procuring public works projects.

The mean values for the VFM measures as rated by Hong Kong respondents ranged from 2.82 to 4.18. This observation has reflected that the variation in their responses are relatively small, only 1.36 for Hong Kong. In Australia and the United Kingdom the means ranged from 2.36 to 4.70 and 2.38 to 4.02 respectively. The corresponding differences in means were 2.34 and 1.64 respectively. The differences in means were slightly higher for the survey conducted in Australia and the United Kingdom compared

to Hong Kong. This finding shows that the Hong Kong respondents rated the eighteen VFM measures much more similarly, whereas in Australia and the United Kingdom the respondents showed a slightly larger variation.

As the respondents were asked to rate the eighteen VFM measures according to a Likert scale from 1 to 5 (1 = Least Important and 5 = Most Important), a value above '3' would represent that the VFM measure is of importance. Amongst the VFM measures only two were ranked below '3' in the Hong Kong rank. These VFM measures were 'Low shadow tariffs/tolls' and 'Environmental consideration' which scored 2.82 and 2.97 respectively. In Australia and the United Kingdom three and five VFM measures were rated below '3' respectively. Similar to Hong Kong, the other respondent groups also rated 'Environmental consideration' below a score of '3' with scores of 2.73 and 2.38 respectively. This finding showed that environment related issues showed the least effect towards enhancing VFM according to all groups of survey respondents.

Insert FIGURE 5 here.

5. Conclusions

This paper has discussed the VFM measures rated by survey respondents from Hong Kong, Australia and the United Kingdom. The results showed that there were two VFM measures that were ranked highly by all groups of survey respondents. The first of these which was ranked top in Hong Kong was 'Efficient risk allocation (allocating the risk to the party best able to manage it)'. Appropriate risk allocation so that risks are assigned to the party best able to manage it, is believed to reduce the problems encountered in a project. As a result VFM is enhanced due to fewer risks occurring in the project life. The second VFM measure ranked highly by all was 'Output based specification'. A clearly defined output based specification enables the milestones and activities in a project to be much more predictable compared to one without hence the effect towards VFM is larger. Ranked thirdly in Hong Kong was 'Competitive tender'. This measure can create VFM when it exists. The more competition in the tendering process, the more the private sector will try to offer a better package overall for the public sector. In Hong Kong unfortunately there is limited competition between those companies that can handle PPP projects; hence the respondents felt that this VFM measure is relatively more important. Ranked fourth and fifth in Hong Kong was 'Private management skill' and 'Private sector technical innovation'. Both of these VFM measures relate to the ability of the private sector. Obviously the better the private sector's ability the more chance there is for them to enhance VFM. In Hong Kong the skill of the private sector in conducting PPP projects may not be as experienced as the Australia and the United Kingdom, hence the respondents felt strongly towards these measures.

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Table 1. Mean scores and rankings for the VFM measures in PPP projects

	Hong Kong			Australia			United Kingdom (Li, 2003)		
	N	Mean	Rank	N	Mean	Rank	N	Mean	Rank
a. Competitive tender	34	3.91	3	11	4.27	6	61	3.5	6
b. Efficient risk allocation (allocating the risk to the party best able to manage it)	33	4.18	1	11	4.55	2	61	4.02	1
c. Risk transfer (transferring a substantial amount of risk from the public to the private)	34	3.59	8	11	2.73	17	61	3.57	5
d. Output based specification	34	3.91	2	11	4.27	5	61	3.91	2
e. Long-term nature of contracts	34	3.65	7	11	4.18	7	61	3.78	3
f. Improved and additional facilities to the public sector	34	3.35	12	11	4.00	11	61	3.16	13
g. Private management skill	34	3.82	4	11	4.27	4	61	3.41	7
h. Private sector technical innovation	33	3.82	5	10	4.50	3	61	3.28	9
i. Optimal use of asset/facility and project efficiency	34	3.68	6	10	4.70	1	61	3.31	8
j. Early project service delivery	34	3.35	11	11	4.00	10	61	3.72	4
k. Low project life cycle cost	34	3.47	10	11	4.00	9	61	3.24	11
l. Low shadow tariffs/tolls	34	2.82	18	10	3.30	13	61	2.49	17
m. Level of tangible and intangible benefits to the Users	34	3.00	16	11	4.00	8	61	2.83	15
n. Environmental consideration	34	2.97	17	11	2.73	16	61	2.38	18
o. Profitability to the private sector	34	3.18	13	10	3.00	15	61	2.84	14
p. "Off the public sector balance sheet" treatment	34	3.15	14	11	2.36	18	61	3.23	12
q. Reduction in disputes, claims and litigation	34	3.09	15	11	3.18	14	61	2.81	16
r. Nature of financial innovation	34	3.56	9	11	3.73	12	61	3.25	10

* N = Number of survey respondents

Table 2. Results of Kendall's concordance analysis for the VFM measures in PPP projects

	Hong Kong	Australia
Number of survey respondents	32	7
Kendall's coefficient of concordance (W)	0.199	0.459
Chi-square value	108.189	54.567
Critical value of Chi-square	27.590	27.590
Degree of freedom (df)	17	17
Asymptotic significance	0.000	0.000

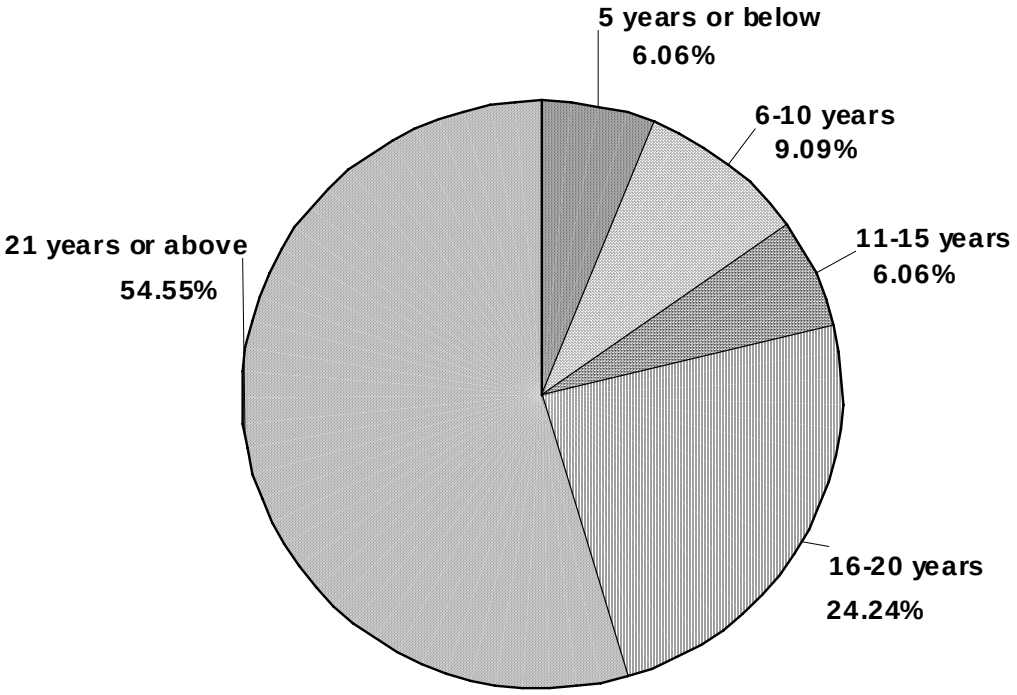

Figure 1. Pie chart showing the number of years of working experience in construction industry for the Hong Kong survey respondents

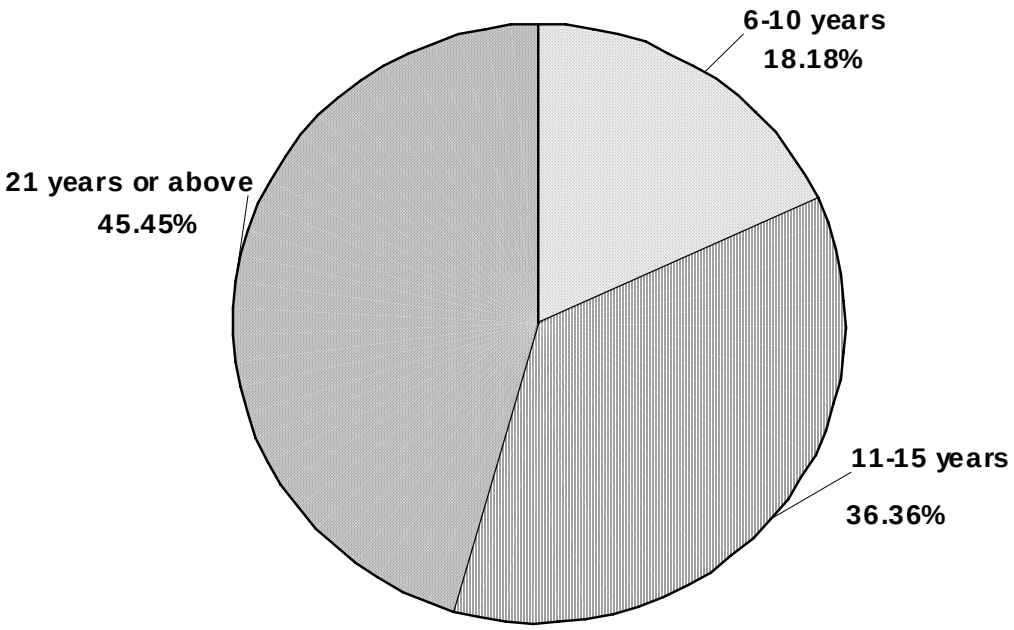

Figure 2. Pie chart showing the number of years of working experience in construction industry for the Australian survey respondents

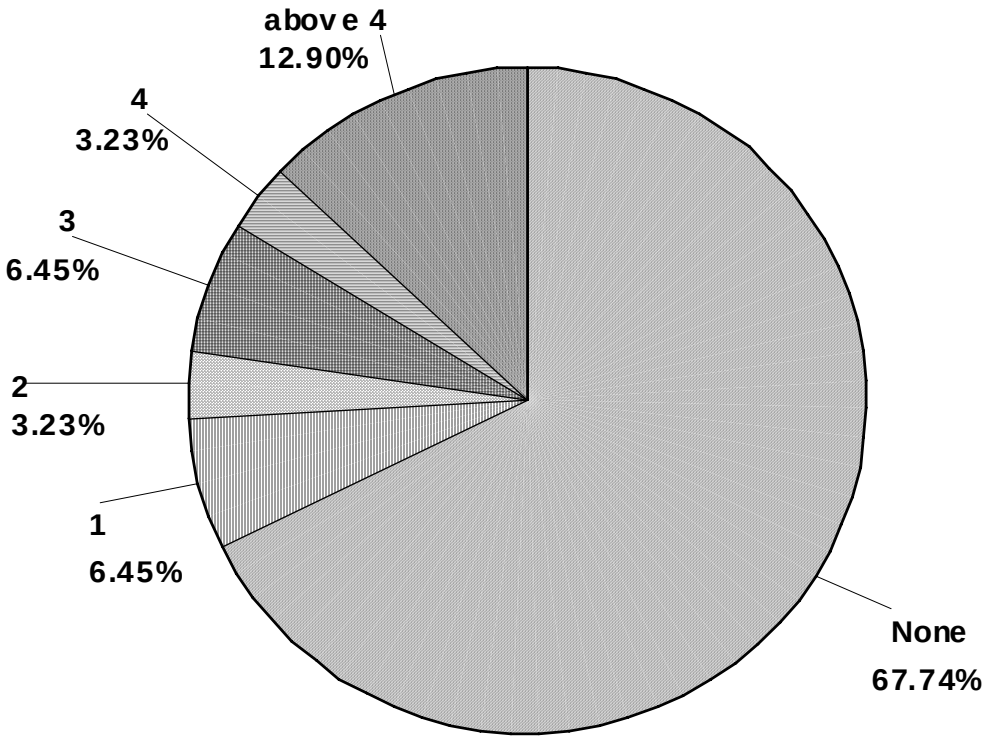

Figure 3. Pie chart showing the number of PPP projects the Hong Kong survey respondents have been involved with

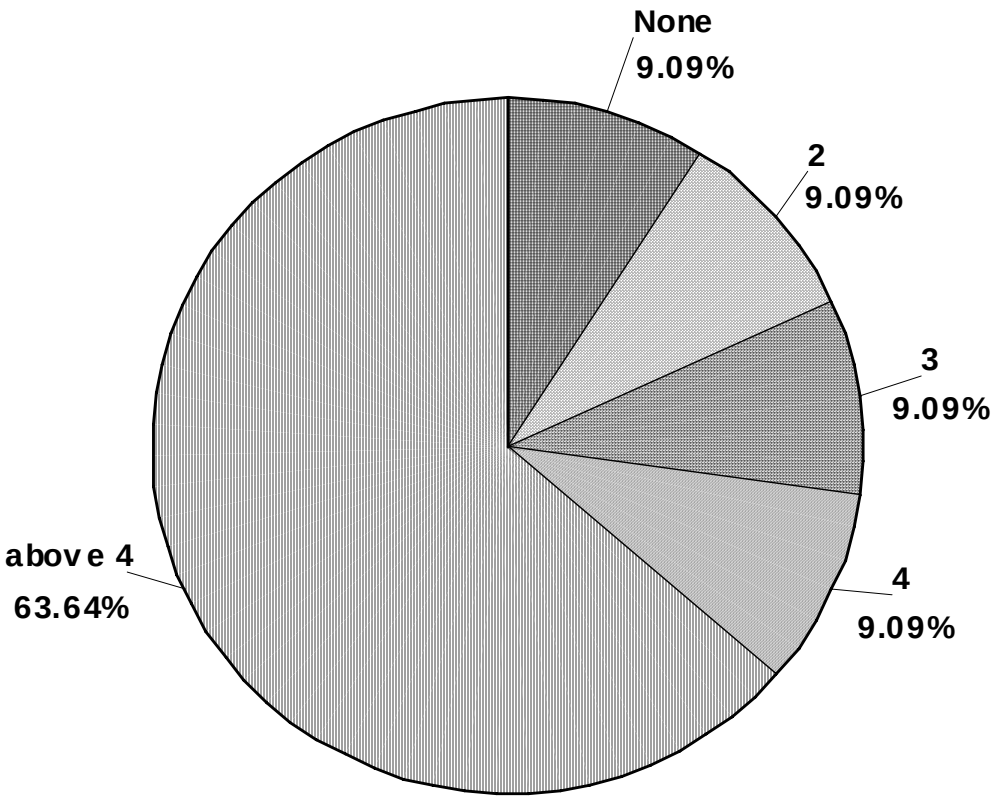

Figure 4. Pie chart showing the number of PPP projects the Australian survey respondents have been involved with

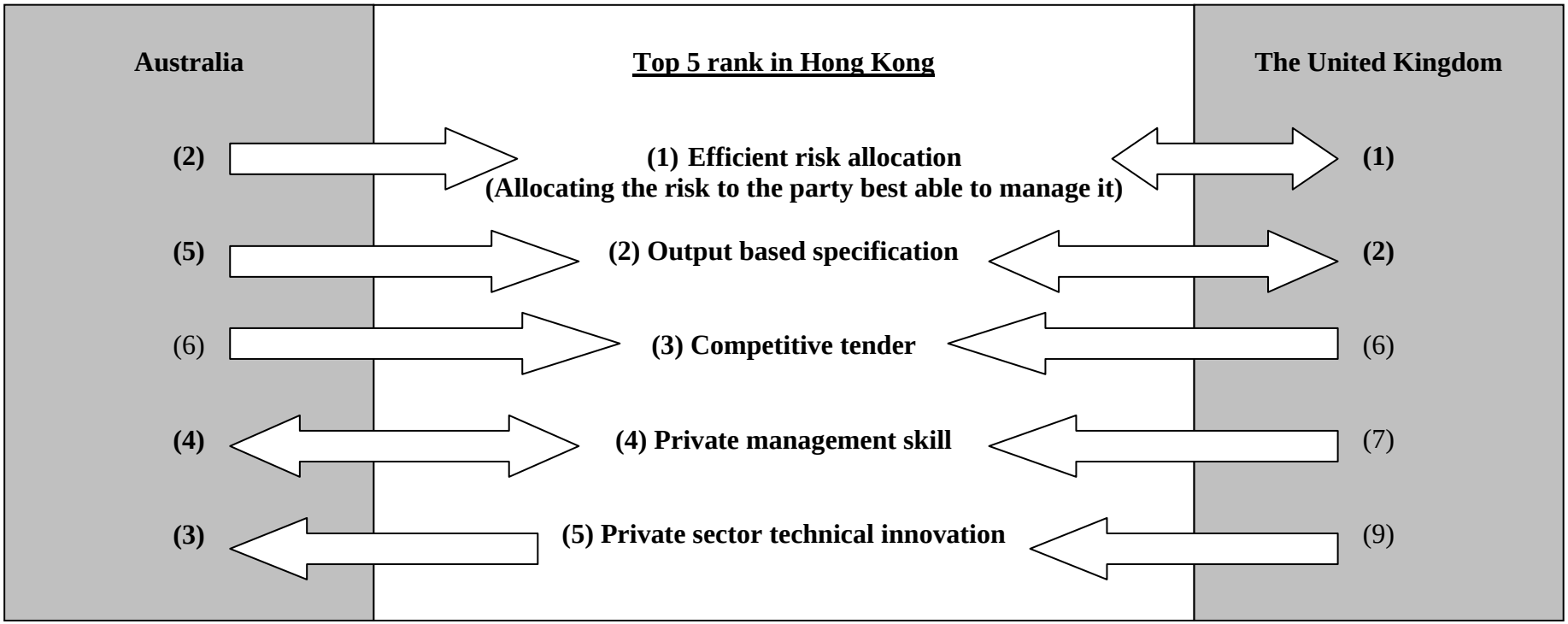

Figure 5. Rank relationship between Hong Kong, Australia and the United Kingdom