

Stimulating the attractiveness of PFI/PPPs using public sector guarantees

Public sector
guarantees

239

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Abstract

Purpose – Although the UK Guarantee Scheme for Infrastructures (UKGSI) was introduced in 2012 to address the huge financing gap for critical infrastructures, PFI sponsors have so far guaranteed only few projects. Many stakeholders in the project finance industry have blamed this situation on lack of general understanding of strategies for harnessing the benefits of the government guarantee scheme. The purpose of this paper is to investigate the perspectives of UK's PFI/PPP stakeholders on critical factors influencing approval for government guarantees using the UKGSI as a focal point.

Design/methodology/approach – Using a mixed methodology approach, this study identified 26 important criteria used in evaluating government guarantee applications through focus group discussions with PFI stakeholders. The identified criteria were then put in questionnaire survey to 195 respondents within the UK PFI/PPP industry.

Findings – Through factor analysis, five critical factors determining successful government guarantee application were unravelled. These include: compliance with UK National Infrastructure Plan; demonstration of project bankability and risk management; value for money; proof of projects' dependence on government guarantee; and certainty of planning commission's approval.

Originality/value – Results of this study will facilitate an in-depth understanding of critical factors necessary for accessing government guarantee scheme for PFI/PPPs, while also improving the bankability of potential PFI projects.

Keywords Public private partnership (PPP), Stakeholders, Public sector, UK Guarantee Scheme for Infrastructures (UKGSI), Private finance initiatives (PFI)

Paper type Research paper

1. Background

The last global financial crisis (GFC) in 2007/2008 raised serious debates about risk management in the banking sector (Demirag *et al.*, 2015). Leading up to the market crash, bank funding was very much accessible with significant competition for PFI/PPP projects by offering attractive loan pricing and structures to sponsors (Mills, 2010). However, by the beginning of 2008, the sheer enormity of financial loss suffered by project financiers, especially mono-line credit insurers at the wake of crisis, led many banks out of the PFI/PPP



market (Haran *et al.*, 2013). According to the 2013 report of European PPP Expertise Centre, the European PPP market had plunged to its lowest level towards the end of 2012, with deals reaching financial close as low as €11.7bn. This reduced global activity for PPP, particularly bond and senior debt finance created huge uncertainty that threatened long-term finance for many public sector infrastructures (Hampl *et al.*, 2011). Therefore, the need for government interventions became urgent and necessary amidst growing infrastructure demands (Toms *et al.*, 2011; Connolly and Wall, 2011).

Realising the need to encourage more private sector investments in new UK's public infrastructures (valued at £250bn in the NIP Policy, 2011), the HM Treasury introduced an infrastructure stimulus package known as UK Guarantee Scheme for Infrastructures (UKGSI) in July 2012 (Wynne, 2015). The primary aim of the scheme was to avoid delays to private investments in viable UK infrastructures, which may have been hindered by the adverse credit situation in the financial market (HM Treasury, 2014a,b). As part of its mandate, the scheme was to provide a sovereign-backed guarantee that makes high-risk infrastructural projects within the UK bankable to lenders, while also stimulating growth within the financial market (Wynne, 2015). However, despite the laudable objectives behind the UKGSI, a recent report from the National Audit Office (NAO, 2015) revealed that many project sponsors have only been able to secure guarantee for few infrastructure projects. According to NAO (2015, p. 5), out of the 200 applications for government guarantee scheme received by the Treasury Department, only 7 projects have been approved while 39 other projects were pre-qualified.

From the perspectives of the HM Treasury (2013), notable among the factors militating against project sponsors' access to this fiscal facility is poor structuring of potential guarantee applications for projects. Wynne (2015) argued that many project sponsors seeking government guarantee often fail to prove commercial viability of their business cases. According to HM Treasury (2014a, b), extensive due diligence appraisals are conducted on guarantee applications, in a similar way to that carried out by project finance banks. As a result, project sponsors are expected to present guarantee applications with strong potentials that can withstand government set criteria and a test of viability (Wynne, 2015). However, while the existence of government guarantee would understandably encourage project lenders towards financing PFI projects, the unstable PFI market makes raising senior debt a challenge for sponsors (Connolly and Wall, 2011; Johal *et al.*, 2012). As such, many project lenders (banks) have avoided long-term lending (Crotty, 2009; Johal *et al.*, 2012; Demirag *et al.*, 2015), while the available loan deals are concentrated in few large projects (refer to Figure 1). Based on the foregoing facts, the

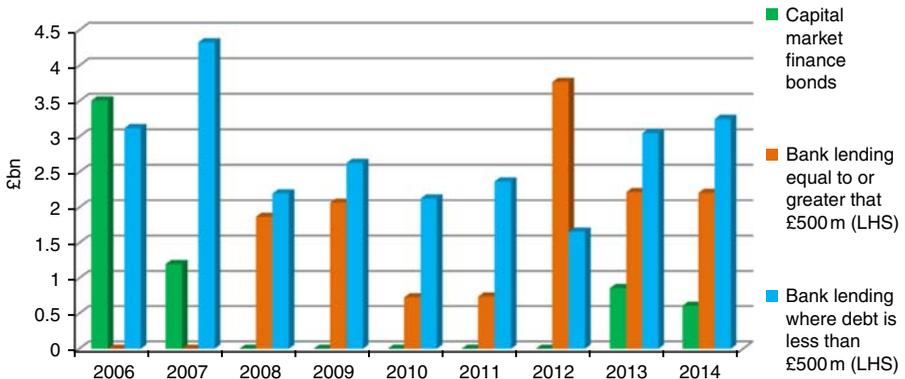


Figure 1.
Volume of bank lending and bonds to UK PFI projects (£bn) between 2006 and 2014

Note: The graph reveals that banks lend to fewer PFI projects with value above £500m, compared to PFI projects of value below £500m over the 9-year period

Source: Adapted From National Audit Office (2015)

UK Government still foresees shortage in market efficiency, coupled with sustained high procurement costs (NAO, 2015; Demirag *et al.*, 2015).

Currently, the newly revised National Infrastructure Plan (2014) has revalued UK's infrastructure needs as £466bn (HM Treasury, 2014a, b). Two-thirds of these infrastructures are proposed to be funded via private sector routes such as the PFI/PPP (NAO, 2015). Therefore, the big question that PPP stakeholders have continued to ask is what reliable strategies can be used by project sponsors in order to ensure successful government guarantee approval. The focus of this paper is to investigate PFI/PPP stakeholders' perspectives towards identifying the critical factors influencing successful government guarantee applications under the UKGSI.

In order to achieve the above aim, this study identified the following objectives:

- (1) to identify a robust and reliable set of criteria relevant for evaluating UK Government Guarantee for PFI/PPP infrastructure project during guarantee appraisal; and
- (2) to explore the underlying critical factors necessary for PFI/PPP project sponsors to win guarantee scheme approval for infrastructure projects under the UKGSI.

This study contributes to existing body of literatures on PFI/PPP procurement, by focussing on mechanisms driving government guarantee approval. The following section begins by examining the post-GFC PFI/PPP market as well as the emergence of UKGSI policy. This is then followed by the research methodology section (mixed methodology), involving focus group discussions and postal questionnaire survey to PFI/PPP stakeholders in the UK for data collection. The next section presents analysis of qualitative and quantitative data from focus groups and questionnaire survey respectively. The final section discusses findings from the survey, which were corroborated with perspectives from stakeholders' elicited during focus groups interviews. However, while the study centres on UK's government guarantees, future studies can take results of this research and confirm its wider applicability in other countries and regions.

2. Post-GFC in UK PFI/PPP market and emergence of UKGSI

In spite of the importance of PFI/PPP for financing public-oriented projects such as roads, rail network, hospitals, etc., (Yang *et al.*, 2013), the last GFC created drastic reduction in loan available for numerous project finance contracts (Meng and McKeivitt, 2011; Hampl *et al.*, 2011; Demirag *et al.*, 2011; Farrell, 2003). The world project finance market which attained a record high \$68.6bn in 2008 suddenly plummeted by the end of 2009 to about \$55.5bn due to the effect of the economic meltdown (Demirag *et al.*, 2011). By the beginning of 2010, the value of bank lending to UK infrastructural projects had fallen from £6bn pre-crisis level to £3bn (NAO, 2015). A big gap between customer deposits and bank loans resulted (Thorhallsson and Kirby, 2012), as government's access to risk free borrowing drastically reduced (Toms *et al.*, 2011). In addition, the new wave of financial regulations and structural revisions that followed, as an aftermath of the credit crunch, led to massive exodus of lenders from the PFI market (Demirag *et al.*, 2015).

Amidst rising pressures on current infrastructures and budgetary constraints (Hodge and Greve, 2007; Demirag *et al.*, 2015), the reality on ground presented governments with enormous challenges in mobilising long-term finance for new infrastructures (HM Treasury, 2014a, b). Due to this negative impact, reversing the dangerous trend and ensuring access to finance for critical infrastructures became a global agenda. This saw a number of developed economies such as the UK, USA, Japan, Australia, China, etc., massively roll out various economic and fiscal stimulus packages (Drew, 2010). The Obama administration rolled out the most massive bailout, injecting about \$US800bn in fiscal stimulus package, into the US financial system (Garrett, 2010).

Following this trend, the UK Government in 2012, passed into law the Financial Assistance Act. This act empowered the Treasury Department to provide financial guarantees for critical

infrastructure in the UK (NAO, 2015) and resulted in the introduction of a four-year UKGSI. The UKGSI was conceived to provide an unconditional government cover for risks as well as other liabilities associated with financing large-scale infrastructures in UK. This HM Treasury's policy was backed by a £40bn cover, which was made accessible to potential investors (project sponsors) in UK infrastructures. The scheme was to facilitate successful implementation of the 2011 National Infrastructure Plan (NIP). The NIP, which is a five-year infrastructure master plan, is coordinated by Infrastructure UK, a department in the HM Treasury. The NIP highlighted priority sectors for new infrastructural investments within the UK economy. Additionally, the policy had earlier documented about 500 new infrastructure projects within the UK, requiring investments to the tune of £250bn, with two-thirds of such investments to be privately financed using schemes such as the PFI/PPP. See Figure 2 for a conceptual framework of the scheme and the focus of the study.

However, since the scheme's emergence, many project sponsors in UK infrastructures have had difficulty accessing the guarantee (Wynne, 2015). While the NAO (2015) highlighted poor structuring of projects' business case as the major barrier preventing sponsors' access to the scheme, some sections among industry stakeholders highlighted poor understanding of the guarantee scheme (Atmo and Duffield, 2014). This perspective confirms reports from HM Treasury (2014a, b), which stated that, apart from poor structuring of guarantee applications, many project sponsors were unable to demonstrate how their proposed PFI projects met set criteria. Wynne (2015) also challenged the absence of transparency and competitive bidding process in the guarantee scheme. Nevertheless, Treasury Department have maintained it conducts its assessment of guarantee applications using best practices (HM Treasury, 2013).

According to HM Treasury (2014a, b), as part of procedures for accessing the guarantee facility, the treasury department conducts due diligence appraisals for project proposals similar to commercial practice by project finance banks. Such appraisal involves risk assessments, economic and technical feasibility of PFI projects. The treasury also ensures that each

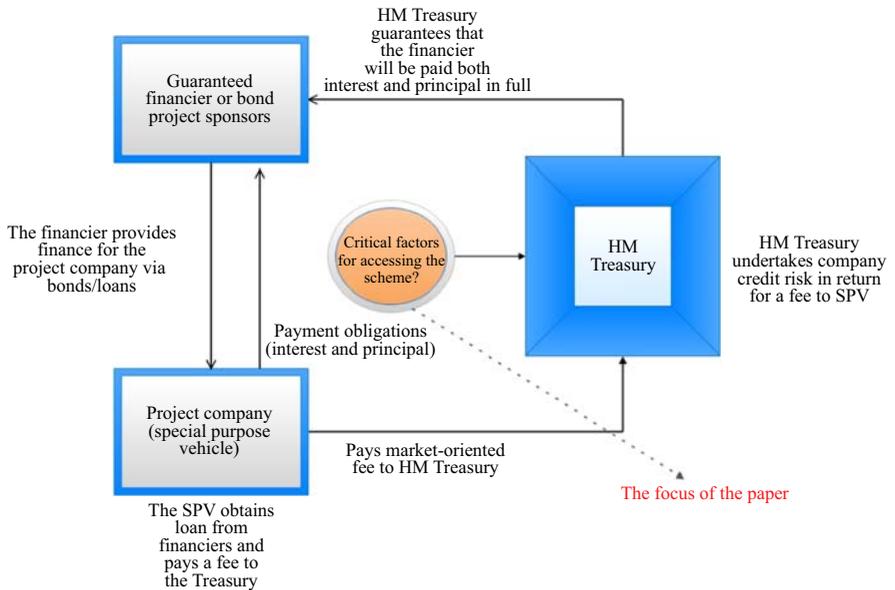


Figure 2.
Conceptual framework
for UK Guarantee
Scheme for
Infrastructures

Source: Adapted from NAO (2015)

infrastructure project company is charged a non-refundable fee that is calculated based on market-oriented benchmark on current prices of risk margins, which it considers as value for money (VFM) to tax payers for accepting project risks. However, a number of criticisms have trailed the overall handling of the scheme and its impact on the entire UK PFI/PPP market (Carbonara *et al.*, 2014; NAO, 2015; Wynne, 2015). Although the Treasury recorded her first guarantee in April 2013, by December 2014, only £1.7bn of the £40bn guarantee facility had been accessed (Wynne, 2015). With the facility due to terminate by December 2019 (although with possible extension of the policy on the horizon), concerns have been raised as to the extent that such public sector guarantees justifies its primary objectives (Carbonara *et al.*, 2014; NAO, 2015; Gropp *et al.*, 2014; Wynne, 2015). Therefore, in-depth understanding of critical factors needed by project sponsors to access the facility has been clamoured (Johal *et al.*, 2012; Carbonara *et al.*, 2014; Gropp *et al.*, 2014; NAO, 2015).

3. Research methodology

In order to deepen current understanding of critical factors for accessing the UKGSI, the need to explore the perspectives of PFI/PPP stakeholders and confirm wider applicability of such views necessitated the adoption of a two-way (explorative cum exploitative) methodological approach for the study. Described as “multiple operationism” by Webb *et al.* (1966), mixed methodology allows the combination of methodologies in a single study. According to Denzin and Lincoln (2008), integrating quantitative and qualitative data in a study is considered essential to increasing richness and rigour in social inquiry. This buttressed Downward and Mearman (2007), who argued that, through triangulation, qualitative findings can be validated using quantitative analysis and vice versa. As such, by augmenting the non-overlapping weaknesses of either methods (qualitative and quantitative), with strengths of the other (Johnson and Onwuegbuzie, 2004; Creswell, 2013); mixed methodology allowed research into the UKGSI to be robust.

The exploratory approach to the study involves focus group discussions with stakeholders in UK PFI/PPP industry. The primary objective here was to facilitate authentic representation of correct views and interpretations that participants’ subjectively attribute to a phenomenon via their daily experiences (Alvesson and Deetz, 2000). This is in contradiction to the imposition of *a priori* theory, where the researcher simply tests a set of pre-defined factors identified from literature using a deductive methodology (Johnson and Duberley, 2000). As such, the focus group discussions helped to bring together stakeholders in UK’s PFI industry to share their common understanding regarding the UK Guarantee Scheme, based on their previous involvement in PFI projects backed by government guarantee scheme. The focus groups comprised representatives of equity firms, senior lenders (banks), PFI/PPP contractors and public sector employees who have been involved in the UK Guarantee Scheme. By building on the views of one another through intersubjective interactions, participants were able to explore various perspectives on the scheme (Creswell, 2013). This provides deeper understanding into shared thinking on the topic of discussion (Chioncel *et al.*, 2003). Thus, the major benefit here is that participants were able to remind one another of perceptions they may not have recalled, an approach which is unlikely in the case of one-on-one interviews (Oyedele, 2013).

Considering the specialised nature of the UK Guarantee Scheme, identifying information-rich participants with experience of the scheme required the adoption of purposive sampling technique for the study. According to Blaikie (2000) and Neuman and Neuman (2006), purposive sampling is best fitted for cases where the researcher intends to conduct in-depth investigation about a unique type of study. This is more essential where the research participants may not be easily reached (Marshall, 1996; Cooper *et al.*, 2006). This sampling approach therefore allowed the researcher to use wide network of contacts in the UK PFI industry, to access suitable stakeholders for the study. Examples of previous studies in project finance that had

adopted this sampling approach are Bing *et al.* (2005), Li *et al.* (2005), Meng and Mckevitt (2011) and Oyedele (2013).

In order to explore participants' common understanding of the phenomenon, four focus group discussions were conducted in all. In sum, 18 participants were involved in the focus group discussions comprising, four public sector employees, four senior lenders (banks staffs), six staff of equity investment firms and four PFI/PPP contractors. In total, all the discussants have been involved in an average of 36 PFI/PPP project finance deals in their career. Additionally, the total numbers of UKGSI applications personally involved in by all participants were 16. The entire focus group discussions lasted 467 min. Table I shows a further description of participants in the group.

Discussions in each focus group explored experiences of various participants regarding PFI/PPP projects with emphasis on their involvement in UKGSI applications for projects. Issues such as how to ensure project bankability and criteria for ensuring successful guarantee applications were examined. Data collected from the focus group interviews were later transcribed and analysed using Nvivo10 software. From the qualitative data transcript, the author identified a comprehensive list of 26 important factors influencing the success of UKGSI guarantee applications for potential PFI/PPP infrastructure projects.

The second phase of the study involved a postal questionnaire survey developed using the criteria identified through focus group discussions. The adoption of questionnaire survey for this study centred on the need for wider applicability and reliability of findings generated from the qualitative study (Oyedele, 2013). Questionnaire respondents were identified via the UK PFI projects' database provided by Partnership UK. From this database, a list of three hundred and five (305) financial and contracting firms, comprising senior lenders (banks), equity firms, financial consultants, hedge funds, pension fund managers, PFI/PPP contractors, etc., were collated. The survey was piloted using three academics (in project management field), four lenders (staff) and two financial consultants, all of whom possess an average of 15.3 years' experience in PFI/PPP deals in various capacities. Their feedback, which included rephrasing, and shortening of few questions were carried out, to develop the final questionnaire. In the final questionnaire, respondents were individually required to indicate the importance of criteria determining approval for PFI projects under the UKGSI. This was done on a five-point Likert scale, where 1 represented "Not Important" and 5 "Most Important".

Distribution of the survey to various respondents was done via postal mail and accompanied by a letter of introduction to the study, as well as a return envelope each. Out of the 271 questionnaires distributed, 195 questionnaires were returned amounting to a response rate of 71.95 per cent. In total, 38 of the questionnaires were incomplete and therefore rejected. This left us with a total of 157 usable responses from senior lenders (banks), equity firms, financial consultants and PFI/PPP contractors, representing 57.93 per cent of distributed questionnaires.

FG	Categories of focus group participants	Public sector employees	Senior lenders	Equity investors	PFI/PPP contractors	Total
1.	No. of interview participants	4	4	6	4	18
2.	Average experience of participants in PFI/PPP project financing (years)	7	9	8	10	34
3.	Duration of focus group discussions (min)	75	112	160	120	467
4.	Job title of interview participants	0	0	2	0	2
	Mid-level staffs					
	Senior staff	3	0	0	2	5
	Manager	1	4	4	2	11
5.	Average no. of PFI/PPP projects involved	9	9	12	6	36
6.	No. of UKGSI applications involved	10	2	3	1	16

Table I.
Overview of participants involved in the focus group discussions

Data collected from the questionnaire survey was later analysed using Statistical Package for Social Sciences (SPSS) Software. Factor analysis, which allowed the exploration and identification of the principal underlying dimensions behind the phenomenon, was conducted. This is in addition to identifying the importance of each criterion from the questionnaire using a significant index rating. Table II shows the summary of sample response from the survey respondents. From Table II, the response rate were, 86.5, 80, 86.4 and 57.3 per cent comprising senior managers of banks, financial consultants, directors of equity firms and construction site managers, respectively. This was considered suitable for analysis based on the claim by Oyedele (2013) that a survey result could be considered to be of little significance and biased if the rate of return was lower than 30–40 per cent. All the respondents have been involved in an average of 21 UK Guarantee Applications for PFI/PPP projects.

4. Analyses of data

This section discusses the qualitative and quantitative analyses of findings from focus group discussions with UK PFI industry stakeholders and responses from the questionnaire survey as regards the UK Guarantee Scheme.

4.1 Qualitative analysis and findings

According to Creswell (2013), qualitative data analysis involves identifying significant statements, meaning units, structural and textual themes that highlight the essence of a phenomenon. This approach allows the researcher to transit from narrow units to broader units of analysis (Alvesson and Deetz, 2000). After extensive discussions that spanned a total of 467 min where participants explored various perspectives on the UKGSI, transcripts of the discussions were produced using Nvivo10 software. The author carefully read the data transcripts on several occasions, while identifying various themes from experiences of industry experts. After thorough analysis of the qualitative data, 26 important criteria that can influence approval for projects under the UK Guarantee Scheme were revealed (see Table II). According to focus group discussants, these various factors, if carefully integrated in PFI/PPP project sponsors' guarantee applications, will improve project bankability, and maximise chances of winning UKGSI approval for potential infrastructure projects (Table III).

The focus group discussions were also used to identify participants' perspectives on issues such as divergent stakeholders' opinions regarding various guarantee criteria.

4.2 Quantitative analysis and findings

Reliability analysis and significance ranking of each criterion. Since one of the objectives of this study is to identify a reliable set of criteria used in evaluating UK Government Guarantee applications, reliability analysis was conducted. With the aid of SPSS, the

Professionals	Number distributed	Number of responses	Percentage (%) return	Av. years of experience	Av. no. of PFI projects involved with
Senior managers (banks)	67	58	86.5	21.5	20–25
Hedge funds managers	25	11	44	12.0	20+
Financial consultants	40	32	80	15.5	25+
Equity investments directors	59	51	86.4	17.0	25–30
PFI/PPP contractors	61	35	57.3	15.0	20–25
Pension funds managers	19	8	42.1	13.0	25+
Total	271	195	71.95	15.6	25+

Table II.
Sample responses from questionnaire survey

Table III.
Important criteria
influencing
approval for UK
Guarantee Scheme

No.	Criteria for accessing the UK Guarantee Scheme for Infrastructures	Focus groups			
		1	2	3	4
1	Project is infrastructure in NIP-defined priority sectors	✓	✓	✓	✓
2	Compliance of project with European Commission guidance on state guarantees	✓	✓	✓	✓
3	Project must be nationally or economically significant in nature (large scale)	✓	✓	✓	✓
4	Project must be non-investment grade due to high construction risk	✓	✓	✓	✓
5	Strong financial credibility of project	✓	✓	✓	✓
6	Project must be technically feasible	✓	✓	✓	✓
7	Existence of front-ended equity commitment from sponsors	✓	✓	✓	✓
8	Project must have robust risk structuring and management framework	✓	✓	✓	✓
9	Competence of project consortium members	✓	✓	✓	✓
10	Project must have obtained approval and permit from authorities	✓	✓	✓	✓
11	Project's readiness to start construction within 52 weeks of guarantee	✓	✓	✓	✓
12	Existence of delay in start-up insurance by project consortium	✓	✓	✓	✓
13	Project's compliance with other legal and regulatory laws	✓	✓	✓	✓
14	Project demonstrates how inadequate finance will hinder project	✓	✓	✓	✓
15	Project demonstrates the viability	✓	✓	✓	✓
16	Consortium proves lenders' risk aversion and desire for more financial cover	✓	✓	✓	✓
17	Consortium proves how absence of guarantee will damage project time scales	✓	✓	✓	✓
18	Clear identification of level of risk exposure in the project	✓	✓	✓	✓
19	Projects must have acceptable credit quality	✓	✓	✓	✓
20	Compliance with social, legal and environmental laws and standards	✓	✓	✓	✓
21	Efficient risk transfer away from tax payers	✓	✓	✓	✓
22	Project's affordability	✓	✓	✓	✓
23	Project offers least cost of procurement	✓	✓	✓	✓
24	Project offers opportunity for technological transfer	✓	✓	✓	✓
25	Project offers innovative designs and strategies	✓	✓	✓	✓
26	Market-oriented fee commensurate to risk borne by the tax payers	✓	✓	✓	✓

Cronbach's α reliability coefficient for the 26 criteria was produced as 0.904. According to Field (2005), a high reliability coefficient usually above 0.7 confirms the greater internal consistency of the entire data to measure the construct it was aimed to measure statistically. Oyedele (2013) indicates that any factor not contributing to the internal consistency of the data will have a higher reliability score than the overall Cronbach's alpha reliability coefficient (i.e. in this study, it is 0.904). Based on the results shown in the third column of Table IV, the 26 set of criteria show strong reliability in evaluating UK Government Guarantee applications for PFI/PPP infrastructure projects.

After the reliability analysis, this study was interested to know the significance ranking of each criterion. A significance index used by similar studies of Tam *et al.* (2000) and Spillane *et al.* (2012) was used. This is mathematically expressed as:

$$Significance\ Index(SI) = \left(\frac{\sum(s)}{NS} \right) \times 100\%, \quad (1)$$

where s represents the significance rating on a Likert scale of 1–5, S is the highest significance rating (5) and N is the total number of responses for that particular factor. The significance index and ranking are shown in columns 4 and 5 of Table IV, respectively. The top five most significant criteria for evaluating UK Government Guarantee Scheme are: the project must be nationally or economically significant in nature; the project must be infrastructure in NIP-defined priority sectors; compliance of project with European Commission's guidance on state guarantees; strong financial credibility of project; and the project must be non-investment grade due to high construction risk. Likewise, the least five criteria for

No.	Factors determining PFI project's approval for UK Guarantee Scheme for Infrastructures	Cronbach's α if items deleted	Significance index (%)	Criteria ranking
<i>F.1</i>	<i>Project compliance with UK National Infrastructure Plan</i>			
F1a	Criteria Project is infrastructure in NIP-defined priority sectors	0.900	95.20	2
F1b	Compliance of project with European Commission's guidance on state guarantees	0.902	94.20	3
F1c	Project must be nationally or economically significant in nature (large scale)	0.899	98.50	1
F1b	Project must be non-investment grade due to high construction risk	0.897	87.40	6
<i>F.2</i>	<i>Demonstration of project bankability and risk management</i>			
F2a	Criteria Strong financial credibility of project	0.901	93.10	4
F2b	Project must be technically feasible	0.900	85.10	7
F2c	Existence of front-ended equity commitment from sponsors	0.879	41.10	26
F2d	Project must have robust risk structuring and management framework	0.902	81.80	9
F2e	Competence of project consortium members	0.893	55.90	21
<i>F.3</i>	<i>Projects' demonstration of value for money to tax payers</i>			
F3a	Criteria Projects must have acceptable credit quality	0.847	91.50	5
F3b	Compliance with social, legal and environmental laws and standards	0.890	69.90	16
F3c	Efficient risk transfer away from tax payers	0.904	79.80	11
F3d	Project's affordability	0.902	83.70	8
F3e	Project offers least cost of procurement	0.902	81.30	10
F3f	Project offers opportunity for technological transfer	0.878	49.50	23
F3g	Project offers innovative designs and strategies	0.898	51.70	22
F3h	Market-oriented fee commensurate to risk borne by the tax payers	0.895	74.70	12
<i>F.4</i>	<i>Demonstrate project's dependence on the UK Guarantee Scheme</i>			
F4a	Criteria Project demonstrates how inadequate finance will hinder project	0.903	61.50	19
F4b	Project demonstrates the viability	0.901	71.40	15
F4c	Consortium proves lenders' risk aversion and desire for more financial cover	0.899	42.90	25
F4d	Consortium proves how absence of guarantee will damage project time scales	0.902	58.30	20
F4e	Clear identification of level of risk exposure in the project	0.896	67.10	17
<i>F.5</i>	<i>Certainty of planning commission's approval</i>			
F5a	Criteria Project must have obtained approval and permit from authorities	0.903	73.90	13
F5b	Project's readiness to start construction within 52 weeks of guarantee	0.901	72.80	14
F5c	Existence of delay in start-up insurance by project consortium	0.898	44.30	24
F5d	Project's compliance with other legal and regulatory laws	0.901	63.20	18

Table IV.
Reliability analysis
and significance
ranking of factors
influencing approval
for UK guarantee for
PFI infrastructures

Notes: Overall Cronbach' $\alpha = 0.904$. Significant at 95% confidence interval = 0.05

evaluating UK Government Guarantee Scheme for infrastructures, as confirmed by the respondents, are: the project offers innovative design and strategies; the project offers opportunity for technological transfer; existence of delay in start-up insurance by project consortium; and consortium proves lender's risk aversion and desire for more financial cover (existence of front-ended equity commitment from sponsors).

Factor analysis. After ascertaining the significance of each criterion, in line with the main objective of the study, which is to unravel the dominant structures underlying the

various criteria, exploratory factor analysis was conducted. Factor analysis is a statistical technique used for data reduction or structure detection in which variability in observed or correlated items are identified from other smaller variables (Meredith, 1993). With factor analysis, a set of key uncorrelated factors are unravelled from the reduced data. The Kaiser–Meyer–Olkin measure of sampling adequacy value and Bartlett test of sphericity were 0.63 (higher than 0.5) and $8.1018e-34$, less than 0.05, respectively. These two tests confirm that the data is appropriate for factor analysis. Principal axis factor and varimax rotation were used for criteria extraction and rotation, respectively. In order to assist in the interpretation of findings, all criteria with an eigenvalue of 1 and above were extracted. In addition, all criteria with factor loading of 0.50 and above were picked for grouping the criteria (Tucker and Lewis, 1973). The analysis shows a five-factor solution with eigenvalues greater than 1 as shown in columns 3 and 5 of Table V. See also Figure 3 for the associated scree plot revealing the graphical representation of the five critical factors. The five-factor solution accounts for 77.22 per cent of total variance and was considered the critical factors influencing PFI project's approval under the UKGSI. All the critical factors are labelled with due cognisance to the criteria that made them up. These are listed as follows:

- (1) Critical factor 1: project compliance with UK NIP;
- (2) Critical factor 2: demonstration of project bankability and risk management;
- (3) Critical factor 3: projects' demonstration of VFM to tax payers;
- (4) Critical factor 4: demonstrate project's dependence on the UK Guarantee Scheme; and
- (5) Critical factor 5: certainty of planning commission's approval.

5. Discussion of findings

This section discusses findings from the study by buttressing results from a questionnaire survey with expert opinions from focus group discussions. The discussions are based on the five critical factors as follows.

5.1 *Critical factors for winning the UKGSI guarantee approval*

Using the eigenvalue as a measure of criteria grouping's significance; evidence from survey responses produced five critical factors for winning guarantee approval. Table V showed that three of the critical factors displayed higher eigenvalues of 4.73, 3.95 and 2.67. This suggests higher importance rating of the critical factors from respondents, with respect to influencing UK Guarantee Scheme's approval for projects, while the remaining two factors' eigenvalues are 2.57 and 1.22, respectively. Studies on PFI/PPP project financing such as Li *et al.* (2005), Zhang (2005) and Ahadzi and Bowles (2004) have adopted a similar statistical method.

5.2 *CF1: project's compliance with NIP*

As shown in Table V, project's compliance with the NIP ranked highest in the survey analysis (see Table V: eigenvalue of 4.73) and is identified as the most important parameter for winning guarantee approval under the UKGSI. These perspectives confirm the views from focus group discussions as reflected by one of the participants who argued that:

Projects of national significance with full compliance to the NIP and European commission's guarantee guidance are majorly targeted under the guarantee scheme. (Focus Group 3)

In line with the above assertion, the National Planning Commission described nationally significant projects as projects classified as large-scale developmental projects that meet a

No.		Eigenvalue	% variance	Factor loading	Public sector guarantees
F.1	<i>Project compliance with UK National Infrastructure Plan</i>	4.737	35.67		
F1a	Criteria			0.843	
	Project is infrastructure in NIP-defined priority sectors				
F1b	Compliance of project with European Commission's guidance on state guarantees			0.801	
F1c	Project must be nationally or economically significant in nature (large scale)			0.687	
F1b	Project must be non-investment grade due to high construction risk			0.585	
F.2	<i>Demonstration of project bankability and risk management</i>	3.952	19.22		
F2a	Criteria			0.739	
	Strong financial credibility of project				
F2b	Project must be technically feasible			0.657	
F2c	Existence of front-ended equity commitment from sponsors			0.623	
F2d	Project must have robust risk structuring and management framework			0.575	
F2e	Competence of project consortium members			0.804	
F.3	<i>Projects' demonstration of value for money to tax payers</i>	2.674	11.14		
F3a	Criteria			0.622	
	Projects must have acceptable credit quality				
F3b	Compliance with social, legal and environmental laws and standards			0.540	
F3c	Efficient risk transfer away from tax payers			0.773	
F3d	Project's affordability			0.638	
F3e	Project offers least Cost of procurement			0.586	
F3f	Project offers opportunity for technological transfer			0.517	
F3g	Project offers innovative designs and strategies			0.864	
F3h	Market-oriented fee commensurate to risk borne by the tax payers			0.858	
F.4	<i>Demonstrate project's dependence on the UK Guarantee Scheme</i>	2.578	7.05		
F4a	Criteria			0.718	
	Project demonstrates how inadequate finance will hinder project				
F4b	Project demonstrates the viability			0.621	
F4c	Consortium proves lenders' risk aversion and desire for more financial cover			0.583	
F4d	Consortium proves how absence of guarantee will damage project time scales			0.869	
F4e	Clear identification of level of risk exposure in the project			0.692	
F.5	<i>Certainty of planning commission's approval</i>	1.229	4.14		
F5a	Criteria			0.661	
	Project must have obtained approval and permit from authorities				
F5b	Project's readiness to start construction within 52 weeks of guarantee			0.549	
F5c	Existence of delay in start-up insurance by project consortium			0.611	
F5d	Project's compliance with other legal and regulatory laws			0.537	
Total			77.22		

Table V.
Factor analysis for the criteria influencing approval for UK guarantee for PFI infrastructures

broad classification of infrastructure, ranging from transport, health, waste, energy, education, courts, prisons, etc. As discovered during the course of the study, infrastructures in these priority sectors, and especially in transport and energy sectors, have been considered to be of priority. This confirms the UK Government's economic agenda to deliver sustainable and effective transport system for the UK in order to allow businesses and people to prosper, while reducing greenhouse gas emissions using more renewable/low carbon energy (Wynne, 2015). To this end, UKGSI allows the Treasury to guarantee large and innovative projects, which may be non-investment grade. Non-investment grade projects are high yield investment portfolio with relatively low credit quality and higher risk of default (Rigobon, 2002). Such projects are often rated below "BBB" from Standard and

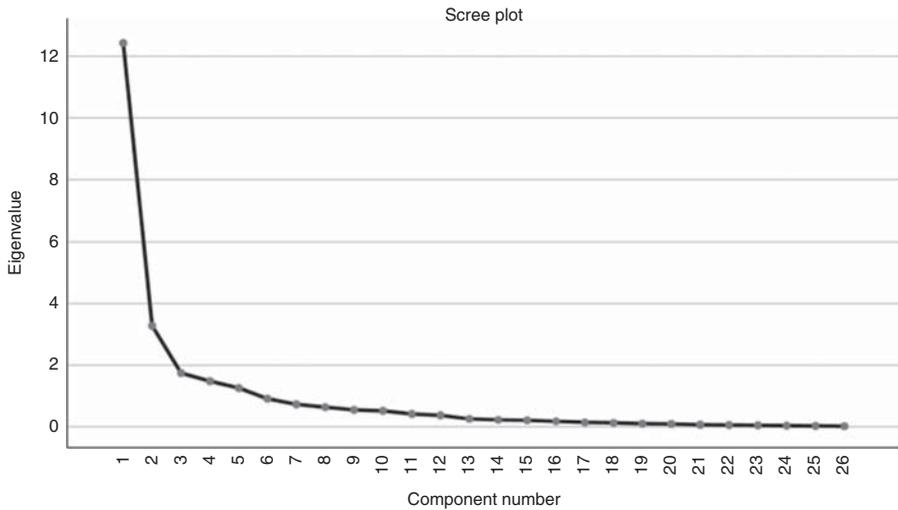


Figure 3.
Scree plot showing
the five critical
factors extracted

Poor's rating agency and "Baa" from Moody's (Hite and Warga, 1997). From the Treasury's perspectives, most large infrastructures are often non-investment grade (NAO, 2015), given their typically higher construction risks (Dailami and Klein, 1997). However, potential projects have to demonstrate potentials for improving credit quality over the course of time and a contribution to economic growth (Wynne, 2015). The criterion of project's contribution to economic growth has however generated divided opinions among focus group discussants, with most private sector participants (equity investment firms, senior lenders, contractors), describing the criterion as very ambiguous. A typical quote suggests that:

One of the major criterion that sponsors may find difficult to address is to prove a project's contribution to economic growth, considering the absence of any objective testing criteria for such from the government. There are certain aspects that seem rather subjective. (Focus Group 4)

However, public sectors participants argue that, such criteria are left to the internal decisions of the Treasury but may be influenced by the novelty of such project and its wider impact on the UK as a whole. Additionally, findings also reveal that projects with higher than 5 per cent default risk in any particular year stand little chance of being guaranteed, since that contravenes the European Commission's guideline on guarantee scheme. The availability of relevant price benchmarks for non-investment grade risks in the project will better project assessment.

5.3 CF2: demonstration of project bankability and risk management

Project bankability and risk management ranked next in importance based on evidence from survey responses as shown in Table V with an eigenvalue of 3.95. This result suggests that, given the high-risk nature of PFI/PPP projects, bankability remains the next crucial factor to consider (Yescombe, 2013). As such, a project is not considered bankable where risks related to its' commercial viability have not been identified, allocated and mitigated within the project structure from a commercial perspective (Meng and Mckevitt, 2011). These perspectives confirm opinions expressed by focus group discussants as summed-up by a senior lender who argued that:

The crucial thing here is that the project must demonstrate bankability. In reality bankability is actually the starting point for any project financing, and the guarantee scheme prioritises this as well [...]. (Focus Group 1)

In line with the above assertion, HM Treasury (2013) highlighted that projects must demonstrate bankability by satisfying minimum bankability requirements. Bankability in PFI/PPP projects requires that the commercial terms of a project be satisfactory to lenders. This emphasises the project's ability to generate sufficient income that enables debt repayments to financiers and returns on investments to project sponsors (Meng and Mckevitt, 2011). According to Delmon (2011), projects must show robustness in cash flow projections, which is based on an adequate debt service cover ratio over the project life cycle. Zhang (2005) argued that financial robustness in PFI projects is often hinged on successful project completion, which marks the end of construction stage. As such, assurances that such project will be successfully constructed within financial budget and stipulated time will require technical competence on the part of the project consortium (Akintoye *et al.*, 1998). In that respect, competent construction contractor with wealth of experience in such projects, financial strength and tried-and-tested project technology will boast project bankability (Mills, 2010).

Results also show that, since most PFI/PPP projects are often front-loaded in terms of capital involvement at the construction stage, sponsors may enhance bankability chances by agreeing to a front-ended equity injection. Front-ended equity stake in PFI projects (sponsors put in all their capital from project commencement) is seen as a huge demonstration of commitment from project sponsors towards the success of the project (Hoffman, 2008). Evidence also shows that, where a guarantee application demonstrates strong understanding of project risks and capability to efficiently allocate and manage such risks in manner that unburdens the public sector, more bankability is conferred on such project. This buttressed Gropp *et al.* (2014), who argue that, the public sector is not involved in speculative businesses, and, as such, any risk transfer to public sector under any guise must not be at the expense of the tax payers. Therefore, competence on the part of the project consortium will ultimately inform the series of financial, technical and managerial decision that will ensure the bankability of projects (Mills, 2010), and a successful guarantee bid.

5.4 CF3: projects' demonstration of VFM to tax payers

VFM ranked third as a parameter influencing approval for UKGSI. This is evidenced by survey results in Table V, with an eigenvalue of 2.67. VFM to tax payers is considered a critical parameter for winning the UKGSI guarantee. In November 1994, the UK Government mandated all public sector procurements to pass through VFM test (Akintoye *et al.*, 2003). Here, the HM Treasury puts all procurements, using private sector finances, under three cardinal criteria, namely, cost savings in comparison to cost of direct traditional procurements (using public sector comparator), affordability and efficient risk transfer away from the public sector (Cheung *et al.*, 2009). Finding show that, besides charging market-oriented fee to guaranteed project companies (which is considered the most important factor under the UKGSI VFM test), the VFM assessment also involves examining the viability of the project, social and environmental impact assessments, opportunities for innovative designs and strategies, etc.

However, the need for guarantee applications to fulfil VFM criteria generated various perspectives among focus group participants. While participants expressed collective views concerning the importance of VFM, they expressed different opinions on the number of VFM tests required for projects applicants under the scheme. Most private sector participants (senior lenders, equity investors and PFI/PPP contractors) in the focus group considered the scheme's VFM test as cumbersome. As one discussant argued:

Let's not forget that in a PFI project, there is VFM test, during the bidding stage where the public sector clients expect a demonstration of VFM. Therefore having another VFM test at the guarantee stage simply is too much bureaucracy to the current system [...] and obviously something has to be done to our regulatory regimes. (Focus Group 2)

From public sector participants' opinions, the current VFM test only examines whether the fee charged to project companies for obtaining government guarantee represents value to tax payers or not. This approach to VFM, according to many participants, is not holistic enough. As exemplified in the views of one participant:

Value for money ensures the project does not present any fiscal or economic risk to the financial system. But quite frankly [...]. the challenge here is that we can't just simply look at the fees charged by the Treasury on guaranteed projects as representing VFM, while neglecting the aspect of whether the project itself represents VFM. So there is still need for bottom up approach on VFM in the scheme. (Focus Group 3)

This perspective buttressed a recent study by Gropp *et al.* (2014), who argued that public sector guarantees have been argued to represent another on-balance sheet financing for governments, and, as such, require proper management to the extent that it galvanises lending markets to their traditional roles.

5.5 CF4: demonstration of project's dependence on the UK Guarantee Scheme

Dependence on UKGSI is also another critical factor that influences guarantee approval under the UKGSI. Table V indicate an eigenvalue of 2.57 from the survey results. As argued by NAO (2015), justifying the reliance of a proposed project on government guarantee is essential upon the objective that the UKGSI is not designed to grant direct infrastructure loans to project sponsors. As such, the facility must serve targeted audiences and prevent a situation where sponsors obtain guarantee for projects that could have been financed independently with no recourse to the scheme (HM Treasury, 2014a, b). These arguments also reflect perspectives from focus group discussions as aptly captured by one of the participants who argue that:

The scheme will only consider projects that prove how it cannot go ahead without the backing of UKGSI guarantee. There are several ways of proving that, but of course there is no point providing guarantee to projects who have no business been guaranteed. (Focus Group 1)

Wynne (2015) buttressed the above assertions by arguing that it is essential to avoid investors' undue exploitation of the public sector guarantee. This is because when providing guarantees, the public sector may incur significant contingent liabilities, such that if called upon to be paid, can be an enormous financial obligation (Wibowo and Kochendoerfer, 2010). Tiong (1995) argued that it is not logical for the public sector to allow project sponsors to simply make money while the risks in a project are passed down to the tax payers. To this end, guarantee applications must demonstrate how such PFI projects are not financeable from a commercial point of view. Findings show that sponsors may need to clearly articulate a detailed framework of barriers to such project investments in terms of identifying high-risk profile of such projects, which therefore makes such a non-investment grade investment, and thus require government guarantee support. Other strategies may include a demonstration of the benefits and significance of such PFI project to the economy that makes it laudable (e.g. low carbon emission projects, reducing travel time on transport links, etc.). Evidence of the prior financiers' verdicts on the projects weak prospects on a commercial level due to enormous technical and other risk risks may also confer some weight on the justification (Tiong, 1995; Kumaraswamy and Zhang, 2001). In addition, evidence of the credit quality rating of such project from credit rating agencies (e.g. Moody's, Standard & Poor's, and Fitch) may give further impetus to the application concerning its weak credit rating (Wibowo and Kochendoerfer, 2010).

5.6 CF5: certainty of planning commission's approval

Obtaining planning commission permit ranked least with respect to its' influence on winning UK guarantee approval for PFI projects, based on results from survey analysis

with an eigenvalue of 1.22 (see Table V). The need for planning permit was highlighted during the focus group discussions as one discussant argues that:

The planning commission's permit has been part of the system for years with respect to any development project in the UK. But the challenge here for sponsors has always been delays to obtaining planning permits and this has stalled many guarantee applications for important infrastructures. (Focus Group 4)

The need to obtain planning permit was highlighted by Mills (2010) and Wibowo and Kochendoerfer (2010), who argued that obtaining planning permits and approval for construction and operations of PFI projects is crucial to public sector guarantee for BOT projects. According to Mills (2010), such permit represents a major confirmation that the project sponsors are hoping to commence serious construction and operations of projects in earnest. Further evidence shows that as part of procedures for considering guarantee applications, the UKGSI will consider whether the PFI project demonstrates evidence that it will commence construction of the project within 52 weeks of guarantee approval. This particular factor may however be undermined by the lengthy procedures for obtaining planning permits (HM Treasury, 2014a, b). According to National Planning Act (2008), decisions on applications for development consent orders are in strict accordance with National Policy Statements (NPSs). However, NPSs pass through a series of procedures with respect to public consultations and parliamentary enquiry, before the government's formal approval. The entire cycle of obtaining planning commission's permit from the pre-application stage through to acceptance, pre-examination, examination, decision and post-decision stage may take not less than one year and four months. Further evidence also indicates that, in a number of situations and for certain types of PFI infrastructures, sponsors may also be required to provide additional information with regards to compliance with the NPSs. However, considering the amount of time invested in obtaining planning commission approval for PFI infrastructures (seeking to obtain UK Guarantee), many applications have been aborted at this stage. Findings also show that many at times, project sponsors opt for a "Delay in Start-up Insurance", in order to boost chances of winning government guarantee approval. The National Audit Office in its recent report of 2015 has bemoaned the lengthy process of obtaining planning permit for projects seeking government guarantee, arguing that, such prolonged process is capable of frustrating the successful implementation of the UK Guarantee Scheme.

6. Conclusion

The intervention of the UK Government through the UKGSI became necessary upon the aftermath of the last GFC, which badly affected the PFI market and threatened private sector finances for UK public infrastructures. This study investigated the perspectives of stakeholders in the UK PFI/PPP industry with respect obtaining guarantee approval under the UKGSI. Issues such as critical factors for winning guarantee approval and divergent stakeholders' perspectives on guarantee criteria were explored. The study adopted a mixed methodological approach involving focus group discussions with PFI stakeholders (i.e. equity sponsors, lenders, etc.) and postal questionnaire survey to ensure wider applicability of findings. After much explorative cum exploitative studies conducted, findings from the study revealed 26 important criteria influencing successful guarantee application. The significance index and raking of the criteria revealed five topmost criteria which include: the project must be nationally or economically significant in nature; the project must be infrastructure in NIP-defined priority sectors; compliance of the project with European Commission's guidance on state guarantees; strong financial credibility of project; and the project must be non-investment grade due to high construction risk. With the aid of factor analysis, a five-factor solution representing critical factors underlying the various criteria for winning the UK Government Guarantee approval were unravelled. These critical factors include: the project alignment with UK NIP policy in

terms qualifying as infrastructure and falling within priority sectors (i.e. roads, rail, aviation, renewable energy, etc.); demonstration of project bankability and risk management (i.e. credit quality); the project's demonstration of VFM; demonstration of the project's dependence on the guarantee scheme; and certainty of obtaining planning commission's permits for projects. The study shows that the five-factor solutions, if diligently incorporated in guarantee applications, will enhance the approval rate. Further evidence from the study also suggest differences of opinions among PFI industry stakeholders with respect to the appropriateness of a number of the criteria (i.e. VFM and project's contribution to economic growth). These diverse opinions put the private sector participants (i.e. equity sponsors, senior lenders and PFI/PPP contractors) and public sector employees on separate divide on issues. The study showed that the absence of objective testing indicators for certain guarantee criteria (VFM, measuring economic growth impact of project) have hindered project sponsors' understanding of how best to access the UK Government Guarantee Scheme. The rigorous nature of the VFM assessment of the scheme has also been questioned with the public sector calling for project-level to guarantee-level VFM assessment. In this regard, policy makers must therefore address the divergent stakeholders' opinions, in order to create a win-win strategic framework with a bottom-up approach. Additionally, a robust engagement with industry stakeholders to foster clearer understanding of the guarantee scheme, transparent and objective evaluation of infrastructure project guarantee applications are also crucial for the public sector to consider. The national impact assessment of the scheme should therefore extend towards examining the total contribution of UKGSI to the entire segments of UK project finance and infrastructure industry as a whole.

The outcome of this study has been limited to the criteria for accessing the UKGSI, particularly with respect to PFI/PPP project financing. Currently, little is known regarding how the scheme evaluates the economic growth impact of a PFI/PPP project under the scheme. Further empirical research might also be required to examine the impact of the UKGSI on green field and brown field infrastructure investments in the UK. This study will no doubt be useful to policy makers, project sponsors, financiers and other industry stakeholders concerning reorganising the scheme as well as exploiting maximum benefits from such government policies in the near future.

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