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The influence of governance on the implementation of Public-Private Partnerships in the United Kingdom and China: a systematic comparison

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Abstract

Although Public-Private Partnerships (PPPs) have been widely implemented in a number of countries, their development and governance contexts are different. This research investigates PPPs through the lens of governmentality and develops a systematic and innovative analytical framework to evaluate and compare the PPP governance in China and the United Kingdom. Based on the findings, a conceptual model is proposed to illustrate the conducting of PPP governance, by the governments involved. The research contributes to the literature on the governance of PPP by providing a clear framework and an assessment tool. The result can benefit the policymakers in different countries, in assessing and improving the efficiency and effectiveness of their PPP governance in practice, hence helping the decision-making of government in identifying and targeting loopholes in their PPP market.

Keywords: Public-Private Partnership (PPP), governmentality, UK, China, governance

1. Introduction

The Public-Private Partnership (PPP) mechanism was introduced to public procurement by the UK government in the 1990s, with the signing of long-term contracts with the private sector, to provide public service and infrastructure (Boardman, et al., 2015). The UK government has continuously developed and adjusted its strategies in governing PPP, including the transformation from Private Finance Initiative (PFI) model to Private Finance 2 (PF2), making UK a relatively mature and healthy PPP market. Currently, there are 715 PFI and PF2 projects, involving a total of £59.1 billion, in capital value, among which, 699 projects are now in operation and 16 were under construction (HM Treasury 2018). Differing

from mainland European countries, the UK government adopted a centralised approach toward the governance of PPP (Verhoest et al., 2015). As the first country to adopt PPP, the United Kingdom has played a prominent role in developing PPP arrangements and influences the spread of models to other countries (Willems and Van Dooren, 2016; Cheng, et al., 2020). Various versions of PPP have been implemented, in both the developed and developing worlds (Wu et al., 2016), with controversy and different operational assumptions being governed in different countries (Hodge et al., 2018; Valila, 2020). The development levels deviate, in response to their political and economic contexts (Love et al., 2015; Petersen, 2011).

As the largest developing country in the world, China is one of the largest emerging PPP markets, although, its development is still in its early stages (Liu et al., 2016). Similar to the UK, the government in China has also chosen a centralised approach to PPP governance (Zhang et al., 2015). Since the Ministry of Finance in China issued the primary document, *The Notice on Issues Relating to the Promotion and Utilisation Public-Private Partnership* (The Ministry of Finance, 2014b), there have been more than 100 policy documents relating to PPP issued by various governmental departments. Under the promotion of the Chinese government, the total number of PPP projects, at varying stages of preparation, procurement, execution, and transition, reached 8,780, as of 2018, with a total investment commitment of ¥155,177 billion (China Public Private Partnerships Center, CPPPC, 2019). Although these policies and documents have attracted a number of PPP investors, PPP has been found to be less mature and yet to achieve the desired sustainability objectives in China (Zhang et al., 2015). As the implementation of PPP in China is rather recent, there has been criticism of apparent government abuse of the concept and the lack of strict entry requirements for PPP projects, as recorded in the national database (The Ministry of Finance, 2017a).

PPP has great potential but can only be realised under the good management of government (Pinz et al., 2017). For developing countries that have newly adopted PPPs, this comparison study, illustrating practices in other countries offers informed guidance for the purpose of assessing and improving their governance of PPP. The prospects of PPP have also attracted the interests of the United Nations, which have actively promoted the use of PPP, to achieve its sustainable development goals and deliver value to the people (Berrone et al., 2019). For the benefit of a healthy and sustainable global PPP market, a systematic comparison between countries with different economic development levels is particularly important, for practitioners seeking to offer ‘best practice’. There is, however, a lack of cross-country comparison of PPP governance, especially between developed and developing markets operating under different political and economic contexts (Verhoest et al., 2015). Furthermore, despite the various studies on governance, a common framework is missing to compare the different

approaches to governance (Muller, et al, 2017). This research aims to fill this research gap by a systematic cross-country comparison between mature and emerging PPP markets and thus contribute to the body of knowledge on the global PPP market.

Governmentality explains the way of governing (Foucault, 1991) and has been widely used to analyse the governance issues of government. In this research, three propositions on the basis of the concept of PPP governance, namely institutions, codes, and process control, are developed, with governmentality theory serving as a theoretical lens. The analytical framework of PPP governance is developed and used to compare the different governance approaches, as between the largest emerging PPP market in China and the most mature market of the UK. In order to address the above issues, the following research questions are posed: 1) When adopting governmentality as a lens, can an understanding be gained, as to how PPP in the UK and China is governed? 2) What are the differences between the two countries in their approach to PPP governance and why do they exist? 3) What can be done to improve PPP governance for the PPP market in China?

2. Literature Review

2.1 Governance of PPP

Considering different goals, the governments in each country should introduce or tailor policies and guidance to govern PPPs effectively under a particular legal framework, as well as a suitable economic and administrative system (Emek, 2015; Reeves, 2015; Siemiatycki, 2015; Zhang et al., 2015). The governance of PPP has been discussed from various perspectives for both developed and developing countries. Factors such as transparency, accountability, value for money (VfM), partnership relationships, risk transfer, and sustainable development have been considered in discussions of PPP governance (Fombad, 2015; Chen and Hubbard, 2012; Heldeweg and Sanders, 2013). Chen and Hubbard (2012) believed that power relations between the government, the private sector, and the general public were determined by institutional environment and resource dependency and suggested that, more effective courts and greater accountability were necessary, in order to enhance the governance of PPP in China. A study based on Belgium indicated that sustainability should be the concern of PPP projects; however, it only played a limited role in current PPP governance (Hueskes et al., 2017). Researchers in India also suggested modifying the current procurement process, in order to overcome the limitations of PPP, in achieving the UN Sustainable Development Goals (Patil and Laishram, 2016a). Mahalingam (2010) analysed five development obstacles of PPP implementation in India and concluded that an enabling institutional context was of vital significance to the successful management of PPPs. Macário et al. (2015) examined the relationship between pitfalls and the regulatory framework in Portugal by analysing the legal framework and institutions involved in PPPs and discovered a lack of capacity in the public sector and the absence of transparency and accountability in project assessment.

Researchers also suggested that the organisational relationships and institutional frameworks governing long-term PPP operations have been overlooked (Hodge, et al., 2018).

In practice, the implementation of PPPs does not always produce expected results; hence good governance of PPPs is crucial for the government to benefit from the use of PPPs as tool for public procurement. Researchers claimed that inappropriate governance of PPPs might lead to project failure (Wang et al. 2020). A case study concerning the London Underground PPP project revealed that the public sector's inability to manage the contract was one of the main reasons leading to project failure (Khoteeva and Khoteeva, 2017). Delhi et al. (2010) raised similar concerns and suggested the public sector should understand their roles and responsibilities in PPP projects, which is crucial in creating a propitious institutional environment, as well as sustainable PPP arrangements.

Comparison studies between countries have recently received academic attention. A number of studies compared case studies regarding a particular type of PPP project between countries, focusing on a micro-level analysis. Examples include the success factors of school projects (Muhammad and Johar, 2018), the process and assessment of waste management projects (Spoann, 2019), the skill requirement for managers (Umar et al., 2019) and the role of government guarantees in PPP (Tsukada, 2018). Chou and Pramudawardhani (2015) compared the key drivers of critical success factors and risk allocation of PPPs through cross country comparison, to identify any similarities and differences, in four countries. Robert and Chan (2017) stressed the contribution of comparison studies between developing and developed countries for practitioners and discussed the success factors for PPP by comparing Ghana and Hong Kong.

Despite the importance of governance to PPP, studies on macro-level PPP governance have mostly focused on single-country analysis, except for the following few studies. Jooste et al. (2011) offered a comparative analysis of three contemporary PPP programmes in three countries with few common characteristics, finding that a PPP-enabling field has developed very differently in these regions. Through a comparison of the governmental support of 20 European countries, Verhoest et al. (2015) identified substantial differences between European countries as regards policies and PPP supporting institutions, while less variation was found concerning legislative and regulative frameworks. Van den Hurket et al. (2015) conducted a comparison of PPP-supporting units across 19 European countries, as well as the relationship between the PPP-supporting units and PPP activity at the national government level. Casady (2020) explored the institutional drivers of 48 PPP markets and identified the key players as being market reliability, political and social will, and regulatory regimes. Chent et al. (2020) compared the policies of different countries and discussed the global PPP market differences. The aforementioned comparative studies addressed either the policy or institutional background of PPP in different countries, while most focus

on the nations with similar development levels. There remains a need, however, for a clear framework for PPP governance that specifies the role of government in regulating and monitoring the PPP market so as to achieve the best VfM. Furthermore, there is a lack of a systematic review of macro-level governance and its influence on the implementation of PPP, as between mature and emerging PPP markets.

2.2 Governance and Governmentality

At the state level, governance can be defined as the employment of political, economic, and administrative authority to manage the affairs of a nation, involving the direction and coordination of different actors (United Nations Economic Commission for Europe, 2004; Rhodes 1997). The core principle of good governance should include accountability, fairness, transparency, efficiency, participation, and decency (Economic and Social Commission for Asia and the Pacific, 2011). In the research on governance, governmentality has been widely applied to the evaluation of the state, organisational, and project levels of governance (Dean, 2010; Muller et al., 2017; Ninan et al., 2019).

Governmentality (Foucault, 1991) has been defined as an alternative to reliance on governance by providing prescribed codes (Ninan et al., 2019) in pursuit of an external incentive structure to motivate individuals to exhibit suitable conduct by means of incentives (Fletcher, 2010). An increasing number of studies have linked between governmentality and governance (Simard, et al., 2018; Muller, et al., 2017). Governmentality helps governments seeking technologies in addressing the recurrent complaint of there being 'too much government' (Rose et al., 2006). The application of governmentality in the discussion on the governance of organisations can help explain the perception of policymakers on governance and the way power functions, by subtly influencing individuals to be complicit under governance (Bevir, 2011). Nevertheless, some researchers argue that governmentality is more suitable to government-level analysis, where accountability must be considered (Lemke, 2012; Wang et al. 2020).

Two approaches to governmentality defined in the existing literature are based on authoritarian liberal and neoliberal rationalities (Dean, 2010). The former emphasises obedience through centralised decision-making, clearness of direction, and significant power distance, while the latter appreciates heterogeneity and uses economic principles and market awareness, to lead rational decision-making (Burchell 1991; Dean, 2010).

Governmentality, propositions reflect the way governments govern, while researchers have selected different propositions, according to the unit of analysis chosen. For instance, Muller, et al. (2017), selected three propositions for governmentality in project governance: organisational values, process, and project wellbeing. In another study, the climate-development nexus was discussed from governmentality perspectives, through the fields of visibility, technicality,

knowledge, and form of identity. A similar study concerning the management of art organisations selected institutions, considered processes, analyses, calculations, and tactics, as propositions of governmentality (Abdullah and Khadaroo, 2017).

The good governance of PPP at the state level involves a form of a structure of governing, the standardisation of regulatory measures, and control of the project process. Governmentality propositions reflect the method government adopts to govern, which includes:

1) *Institutions*: the group or governance institution, which fulfils a particular role in governance. The government conducts the exercise of covert power over the governed, in order to achieve outcomes through incentives (Fleming and Spicer, 2014)

2) *Codes*: governmentality has been referred to as self-surveillance (Sewell 1998) and subjectification (Fleming and Spicer, 2014), as it emphasises codes in place of regulating, as in governance (Ninan et al., 2019). Examples include government guidance and instructions.

3) *Process control*: the government controls the process compliance through techniques and methods, to meet the objectives of governing. By setting criteria for decision-making and defining procedures, the government indirectly guides people and shapes their behaviour (Clegg et al., 2002).

These listed propositions of governmentality of PPP are adopted in this research.

3. Methodology and Research Design

3.1 The research design

Triangulation stresses methods of investigation and sources of data (Denzin, 1978), which can operate within and across both quantitative and qualitative research strategies (Deacon, et al., 1998). It is employed in this research, by a mixed-use of literature and document review, case study, and interview survey. The review and case study addressed the first two research questions, while the interview survey intends to resolve the third research question.

3.2 The development of an analytical framework

Literature was selected from peer-reviewed international journals, from four main academic databases: Web of Science, Elsevier-Science direct, Taylor & Francis, and ASCE (Cui et al, 2018). After two rounds of screening on the relevance of the topic by reading the full text, a total of 54 studies were selected for further analysis based on their relevance to PPP governance. The research origin covers 13 developed and developing countries. There are 14 key elements identified, which are cross-checked by the researchers, for further interpretation (see Table 1).

Table 1. Governmentality context of PPP

Context	References
Contract	Ruiz Diaz (2017); Hodge et al (2018); M.

	Khoteeva and D. Khoteeva (2017); Marques and Berg (2010); Umar et al. (2019); Spoann (2019).
Risk allocation	Li et al. (2005a); Li et al. (2005b); d'Alessandro et al. (2012); Liu et al. (2015); Patil and Laishram (2016b); Ruiz Diaz (2017); Valila (2020); Osei-Kyei and Chan (2017); Marques and Berg (2011); Muhammad and Johar (2018).
Transparency	Li et al. (2005a); Abdul-Aziz and Kassim (2011); Mladenovic et al. (2013); Wibowo and Alfen (2015); Chou and Pramudawardhani (2015); Liu et al. (2016); Hsueh and Chang (2017); Wang et al. (2020).
Tendering process control	Wang (2011); Patil and Laishram (2016b); Pu et al. (2020).
Service Specification	Liyanage and Villalba-Romero (2015); Lam and Javed (2015); Hsueh and Chang (2017); Osei-Kyei and Chan (2017).
Source of financing	Li et al. (2005a); Chan et al. (2009); Umar et al. (2019); Tsukada (2019); Ameyan and Chan (2015).
Supporting unit	Van den Hurk et al. (2015).
Whole life costing	Wang et al. (2014); Wang et al. (2020).
Value for money	Chan et al. (2009); Yuan et al. (2009); Mladenovic et al. (2013); Patil and Laishram (2016b); Hsueh and Chang (2017); Wang et al. (2019); Cruz and Marques (2014).□
Service-driving pay mechanism	Abdel-Aziz (2007); Oyedele (2012); Robinson and Scott (2009); Hsueh and Chang (2017);
Service performance review	Wang (2011); Wang et al. (2014).
Market testing	Patil and Laishram (2016b); Wang (2011); Casady (2020).
Public engagement	Torvinen et al. (2016); Hueskes et al. (2017).

On the basis of the literature review, with governmentality serving as a theoretical lens, an analytical framework is formed as shown in Figure 1. This framework provides researchers and practitioners with an analytical structure for cross-country comparison of PPP governance through a theoretical lens of governmentality, concerning how PPP is organised, regulated, and controlled by the government.

Figure1. A comparative framework of PPP governance

3.3 Data collection

Due to its replication logic, the multiple case study method can be used to observe a new phenomenon (Yin, 2009). Two cases are selected in this research, China and the UK, which are at different development stages of PPP with discrepant political and economic backgrounds.

Further document review helps to identify sub-elements under each element group. The main data sources for document review cover a wide range of official documents from the UK and China, including governmental policy and legal documents, guidance, research reports, project databases, and official websites of key governmental organisations.

A semi-structured interview survey has been designed for validity and further analysing the causes of differences between the two countries, in terms of PPP governance. Based on the literature review results of PPP and the documentation review of the national project databases of the UK and China, we selected 20 experts, including the more influential researchers relating to PPP, officers, and project managers from the public and private sectors. The experts must have had more than five years' work or research experience in PPP. Six experts accepted an invitation to face-to-face interviews: two government officers and a project manager from China, and three professors from the UK. The interviews last from 30 to 60 minutes and are then converted by the authors into texts. The experts are asked to testify and comment on the primary results and to try to analyse the cause of any apparent differences between the two countries and also to offer suggestions for any improvement. A snowball approach is introduced in collecting the data, where one expert's suggestions are included in the subsequent rounds of

interviews. The results are then discussed and summarised among researchers.

3.4 Data analysis

As a deductive method, a template analysis method emphasises the flexible and pragmatic use of coding to represent themes that are organised in a hierarchical structure and the approach can be used in both realist qualitative work, as well as phenomenological and narrative approaches (King, 2004). We adopt a two-step template analysis, using an open code approach, which can break down, examine, compare, conceptualise, and classify qualitative data (Strauss and Corbin 1990). First, the researchers were grouped into two teams, to separately read and encode the PPP documents from the UK and China by theme, under each of the three dimensions of governmentality. For example, the text relating to project changes such as design change and service change, are coded as, ‘change management’. The primary results are discussed amongst the researchers and any discrepancies are resolved, before making cross-team comparisons. Second, the research teams organised the themes into a hierarchical structure, according to their conceptual relationships and roles in the framework of governmentality. The results are then discussed among all involved, to reduce discrepancies and reach a consensus.

4. The evaluation of PPP governance

4.1 The institutions for PPP Governance

Despite the differences in economic background between the UK and China, where the former adopts neoliberal rule and the latter has more characteristics of an authoritarian governmentality style, they both have chosen a centralised approach to PPP governance. Consequently, they bear a close resemblance to each other in this *institutional* dimension.

Both the UK and China have established two-level supporting units (E1), centralised and localised, to maintain the healthy development of PPP, these being managed by different hierarchies of governmental departments (see Table 2). The role and responsibilities of the supporting units in both countries are somewhat similar.

Specially designed PPP project databases (E2) are in use in both countries for PPP projects, which perform similar functionalities. The project database used in the UK was established by Partnerships UK (PUK), aiming to provide an extensive and readily available evidence base for all projects with a public-private focus within the UK. The database currently holds details of 913 PPP projects which have all arrived at financial closure, the database containing over 130 fields of data, detailing the values of projects, equity stakes, successful bidders and advisers, and insurance arrangements.

In China, the PPP database was established by the CPPPC in 2014. The database contains project information, such as the construction area, sector or field, the total project investment, project stage, launch time, the project cooperation scope,

concession period, tendering method, VfM qualitative evaluation report, and the project's annual budget expenditure.

Table 2. Comparison of Institutes

E1	Supporting unit	The UK	China
E1-1	Name	IPA (central level)	CPPPC (central level)
		Local Partnerships (Local level)	PPPPC (Local level)
	E1-2	IPA:	CPPPC:
	Responsibilities	<ul style="list-style-type: none"> • support and de-risking • the skills and capability development • independent assurance Local Partnerships: <ul style="list-style-type: none"> • provide commercial expertise for public sector • operate across a range of sectors and fields • trusted, professional support and advice to public sectors 	<ul style="list-style-type: none"> • policy research • consultancy and training • financing support • information statistics • international communication PPPPC: <ul style="list-style-type: none"> • policy interpretation • provincial PPP project database • reporting and standardising provincial PPP projects.
E1-3	Status	IPA: <ul style="list-style-type: none"> • public body under Cabinet Office and HM Treasury Local Partnerships: <ul style="list-style-type: none"> • company jointly owned by HM Treasury and the Local Government Association 	CPPPC: <ul style="list-style-type: none"> • public body under the Ministry of Finance PPPPC: <ul style="list-style-type: none"> • public body under provincial finance department
E2 Database		Project Database - a record of all private-public projects	National PPP Comprehensive Information Platform Project Management Database
		Established by Partnerships UK (PUK)	Established by CPPPC
		Financial data, values of projects, equity stakes, successful bidders and advisers, and insurance arrangement	Construction scope, sector or field, project stage, launch time, the project cooperation scope, concession period, tendering method, VfM report and project annual budget expenditure

4.2 Codes for PPP Governance

Contract management (E3)

The official PPP contract guidance is provided by the governments in both countries but with different levels of detail (see Table 3). Several differences have become apparent in E3, including contract standardisation, service specification, and contract flexibility.

The current version of standard contract for PPP in the UK (HM Treasury, 2012b) defines terms and provides detailed explanations of the contract provisions

in order to avoid bias and misunderstanding between the public and private sectors involved in such projects. There are also standard templates or guidance provided by the government, to guide the PPP practitioners in how to deliver value testing (E3-3), service specification (E3-4), change management (E3-6), and early termination (E3-7).

The PPP contract guidance was issued by the government in China in 2014 (The Ministry of Finance, 2014b), providing only the principles for PPP project contract management but lacking detailed definitions and interpretation of the provisions. The guidance for E3-3, E3-4, E3-6, and E3-7, has yet to be provided.

The payment mechanism (E3-2) of PPP in the UK determines that the authority must repay the capital investment of the private contractor by a unitary charge, which is evenly distributed throughout the operational stage for VfM purposes. The unitary charge is then linked to the service quality of the private sector during the operational stage, as regards availability, performance, and service deductions. Furthermore, the payment mechanism is closely monitored during the operational stage, to ensure its effectiveness (HM Treasury, 2012b). In this way, the service quality of PPP is strictly related to the contract payment.

Unlike in the UK, where the PPP projects are solely repaid back by the government money, the PPP in China adopts a wider range of pay mechanisms, such as user payment. The contract guidance in China also mentions availability payment and performance payment in order to reflect service quality; however, the methods of measuring the two indicators are not indicated. Moreover, there is no detailed calculation model, to guide practitioners to form and monitor the payment mechanism. The public sector is, hence, entitled to more discretion in the deduction process.

Value testing (E3-3) is stressed by the government in both the UK and China. The value testing in the UK (market testing and benchmarking) is conducted at five-year intervals (HM Treasury, 2012b), with the aim of ensuring the soft services provided by the private sector to be re-competed or re-priced, in accordance with the market price. In order to unify the value testing process of PPP projects across various local authorities and help in improving efficiency, the National Audit Office (NAO) issued specific guidance, detailing the methods for value testing (NAO, 2007).

In China, value testing is required by the government for providing an appropriate price adjustment mechanism to protect the interests of both sides during the long-term operational stage of PPP. The contract guidance suggests three types of price-adjustment mechanisms: 1) a formula-adjustment mechanism, 2) a benchmarking mechanism and 3) a market-testing mechanism and indicates the scope of application and the general implementation procedure of benchmarking and market testing. The testing period was not explained in this guidance and there is no specific guidance for the method and processes to follow.

Due to the importance of change management (E3-6) and early termination (E3-7) in governing PPP during its long-term contract period, the UK government not only explains the relevant provisions in the standard contract but also issues separated pieces of guidance regarding both issues (HM Treasury, 2012c; HM Treasury, 2015). The type of change management and the contract change operation process are clearly defined and the budgeting, accounting, and fiscal implications of the voluntary termination of a PPP contract, as well as the review and approval process, can be practiced following the same procedure throughout the country.

In China, the government guidance provides an explanation of change protocol, the event of default, the conditions for termination, and the handling mechanism after termination (National Development and Reform Commission et al., 2015; The Ministry of Finance, 2014b); however, the provisions were found to be primarily guidance around principles.

Project assessment (E4)

In the UK, project assessment involved throughout the period of a PPP project is conducted either by the authority or a third party, involving, for instance, comprehensive guidance for VfM evaluation (E4-1) at the initial stage, an independent certifier (E4-3) at the construction stage, an annual contract review and a contract efficiency review (E4-4) during the operational stage.

In comparison, the Chinese government only provides general guidance for E4-1 and E4-4, with insufficient instruction on method and assessment criteria. Furthermore, the local authority is required to conduct a financial capability demonstration (E4-2) at the initial stage (not required in the UK), to demonstrate that PPP procurement is an appropriate and affordable alternative.

Risk allocation (E5)

The risk allocation principles (E5-1) adopted by the two countries closely resemble each other. The only significant difference is found in the risk allocation structure (E5-2), where the public sector in China bears fewer risks compared to the UK. In the current PPP model (PF2) of the UK, the public sector carries some risks that were previously inappropriately transferred to the private sector, such as legal risk, the risk associated with the scale of service provide through the PPP, the risk of site contamination by external sources, and the warranty for due diligence and land titles (HM Treasury, 2012a). In terms of the insurance risk, the UK government assigns more flexibility to the local authority concerning the risk-sharing standard of insurance premiums, during the operational stage.

Financing (E6)

Both countries have relevant policies and guidance to attract long-term financing and broaden the financing channels of PPP projects. HM Treasury in the

UK, however, promotes more specific strategies, to achieve the above objectives in practice. For public -sector equity, the UK government proposed an approach of public sector co-investment, to share the returns on investment projects and to reduce the overall cost in increasing the VfM of the project, by establishing a public sector equity investment vehicle, namely, the Central Government Unit (CGU), within HM Treasury. In addition, the UK government also pursues broader sources of long-term debt financing, allowing banks to play an important role in the PF2 project and encouraging the use of various debt financing channels, such as public and private bonds and commercial bank bonds.

In China, it is the National Development and Reform Commission's (NDRC) role to help PPP projects in accessing finance sources, by providing a financial consultancy service, broadening financing channels and encouraging the participation of development banks in PPP (NDRC, 2015); the financing sources are thus more limited than in the UK. In terms of subsidies, the Ministry of Finance also introduces financial rewards to those piloting PPP projects with good performance (The Ministry of Finance, 2015b). During the interview survey, experts commented that 'the financial market in the UK is much more mature and freer than it in China ... the central banks in China are still strictly controlled by the government'.

Regarding budgeting of the life-cycle cost of long-term contracts, there are guidance and methods for conducting life-cycle costing (E7-1) available in the UK. The standardised life-cycle costing method of the Building Cost Information Service (BCIS) provides construction practitioners in the UK with a clear scope and standard structure for presenting the life-cycle costs and a way of benchmarking, in a consistent manner across the country. The British Standards Institution (BSI) also provides guidance and advice for the life-cycle costing of maintenance, during the in-use phase of facilities or constructed assets (BSI, 2013). As a result, life-cycle costing has been widely applied in PPP, to minimise long-term operational costs, however, 'whole life costing is still a relatively new concept to the industry in China', as suggested by experts during the interview survey.

In the UK, a lifecycle fund (E7-2) is set up to cover the contractor's anticipated future major maintenance expenditure, including renewal or replacement of assets in accordance with a lifecycle schedule, during the operational stage of PPP. The UK government adopts several strategies to monitor the use of the lifecycle fund of PPP projects. As the adequacy risk of the lifecycle fund remains with the contractor, the latter is required to conduct lifecycle reviews and provide a lifecycle funding report to the authority every five years during the contract period and at the final year, before the expiry of the contract (HM Treasury, 2012b). In order to ensure transparency of service provision and expenditure, an open-book approach to lifecycle arrangements is adopted between the authority and the contractor. The government also requires any surplus of

lifecyle funding during the operational stage of the project to be shared by the authority and the contractor. In China, however, there is no such strategy to prevent the private sector from gaining excessive profit from any savings in life-cycle fund during the operational stage of the PPP project.

The concept of whole life (E7-3) is also embodied in UK PPP governance. Since the design and construction will affect the maintenance cost of a building during the operational period, the contractor should take into consideration life-cycle costing, early in the design stage. There is a requirement in the standard contract in the UK that the contractor's construction sub-contractor and service sub-contractor, should also participate in developing design and equipment requirements, to satisfy the service requirements under the contract (HM Treasury, 2012b).

Whole life costing (E7)

As a systematic evaluation tool of project whole life costs and benefits over a period of analysis, whole life costing has been treated as a fundamental principle at all stages of PPP projects, including life-cycle costing (E7-1), life-cycle fund (E7-2), and design for whole life (E7-3) in the UK context, details of which, appear in a large number of government guidance documents. The concept of whole life costing, often being associated with sustainability, has been absorbed into the UK government's perception of PPP since its initiation, in supporting the long-term benefits and efficiency improvement in government procurement. Detailed specifications and methods concerning each sub-element in E7 are provided, giving evidence confirming faith in the concept of whole life costing as regards design optimisation and better maintenance efficiency (HM Treasury, 2012a). To date, this concept seldom appears in Chinese government documents. As commented on by experts, the lack of detailed instructions, together with the implementation process of PPP, 'gives more flexibility and advantages to the public sector in discretionary power', 'leaving the private sector with more uncertainties'

Table 3.Comparison of Codes

E3 Contract Management		The UK	China
E3-1	Standard contract	<i>Standardisation of PF2 Contracts</i> (HM Treasury, 2012b)	<i>PPP Project Contract Guide (Trial)</i> (The Ministry of Finance, 2014a)
E3-2	Payment mechanism	Payment mechanism: <ul style="list-style-type: none"> • unitary charge Core indicators: <ul style="list-style-type: none"> • availability of the service • performance of the facilities Annual review of weightings and rectification times	Payment mechanisms: <ul style="list-style-type: none"> • government payment • user payment • viability gap funding Core indicators for government payment: <ul style="list-style-type: none"> • availability • usage

		Contractor's performance monitoring	<ul style="list-style-type: none"> performance
			Performance monitoring mechanism
E3-3	Value testing	Detailed guidance: <i>Benchmarking and market testing the on-going services component of PFI projects</i> (NAO, 2007) Typically undertaken every five years	Provision 3-1-4 in <i>PPP Project Contract Guide (Trial)</i> (The Ministry of Finance, 2014a) Price adjustment mechanisms of government payment
E3-4	Service Specification	Standardised services output specification template for accommodation-based project	No guidance
E3-5	Flexibility	Removal of soft facilities management services Procuring authorities have discretion on the inclusion of certain minor maintenance activities	No guidance
E3-6	Change management	Mandatory part of PF2 contract: a well-developed Change Protocol Detailed guidance: <i>Change Protocol Principles</i> (HM Treasury, 2012d)	Requirement for signing supplemental agreement Provision 4-37 in <i>Measures for Infrastructure and Public Utilities Franchise Management</i> (NDRC et al., 2015)
E3-7	Early termination of contracts	Detailed guidance: <i>PPP Policy Note: Early termination of contracts</i> (HM Treasury, 2015)	Provision 2-18-2 in <i>PPP Project Contract Guide (Trial)</i> (The Ministry of Finance, 2014a)
E4 Project assessment			
E4-1	VFM assessment	Detailed guidance: <i>Value for Money assessment guidance</i> (HM Treasury, 2006)	Principles guidance: <i>PPP Value for Money Evaluation Guidance</i> (The Ministry of Finance, 2015b)
E4-2	Financial capability demonstration	No requirement	Principles guidance: <i>Guidance for the Financial Capability Demonstration of PPP Projects</i> (The Ministry of Finance, 2015a) Upper limit of 10% was set up for annual budget of local government
E4-3	Independent certification	Independent certifier appointed jointly by the Authority and the Contractor	Supervision engineer
E4-4	Operation review	Annual contract review Periodical contract efficiency review	Government monitoring and operations committee monitoring
E5 Risk allocation			
E5-1	Risk	Optimise VfM of risk allocation	VfM of risk allocation

allocation principles		
E5-2	Risk	Authority:
allocation		<ul style="list-style-type: none"> • change of legal risk
structure		<ul style="list-style-type: none"> • utility volume risk • risk of site contamination by external source • warranty for due diligence and land titles
		Shared risk: insurance
E6 Financing		
E6-1	Source of financing	Government:
		<ul style="list-style-type: none"> • public sector co-investment (30%-49%)
		Bank:
		<ul style="list-style-type: none"> • commercial Banks • EIB
		Institution:
		<ul style="list-style-type: none"> • credit rating agencies • institutional investors, such as pension funds etc.
		Government:
		<ul style="list-style-type: none"> • bonus after bidding (¥3M, 5M or 8M) • government equity finance (1%, 5% or 10%)
		Bank:
		<ul style="list-style-type: none"> • commercial banks • state-owned banks
		Institution:
		<ul style="list-style-type: none"> • export credit agencies • insurance companies etc.
E7 Whole life costing		
E7-1	Life-cycle costing	Detailed methods:
		<ul style="list-style-type: none"> • <i>Standardised Method for Life-Cycle Costing of Construction Procurement</i> (BICS, 2013) • <i>Guide for Life-Cycle Costing of Maintenance during the In Use Phases of Buildings</i> (BSI, 2013)
		No guidance
E7-2	Lifecycle fund	Lifecycle review and lifecycle funding report (every 5 years during operation and 12-24months before contract termination)
		An open book approach to lifecycle arrangement
		Surplus of lifecycle fund shared by the Authority and the Contractor
		No guidance
E7-3	Design for whole life	Construction and service sub-contractors participating design (HM Treasury, 2012b)
		No guidance

4.3 Process Control of PPP Governance

Tendering process control (E8)

The complexity of PPP contract results in a time-consuming tendering process. The lack of effective control may reduce the efficiency of PPP implementation and cause project delay. Both the UK and China attach importance to control of the tendering process (see Table 4).

The UK government demands that HM Treasury carry out additional Treasury checks scrutinising project preparation (E8-1), prior to the issuing of a tender (HM Treasury, 2012a). In order to improve the efficiency and specialisation of public-sector procurement (E8-2), the UK government encourages the establishment of a centralised unit and sets time limits for departmental procurement for various PPP projects (HM Treasury, 2012a). There is specific guidance in the UK for competitive dialogue (E8-3), that clearly defines its main stages and the corresponding works that the authority should conduct at each stage (Office of Government Commerce and HM Treasury, 2008).

The Ministry of Finance in China requires specific details from the project implementation agencies, which should be prepared during the project preparation phase and allows the local government (including at county-level) to establish a special coordination mechanism to supervise E8-1 (The Ministry of Finance, 2014c) but with no requirements regarding additional checks. There are only two policy documents providing guidance around principles for E8-3, which define competitive negotiations procurement, single-source procurement, inquiry procurement, and the content of the competitive negotiation procurement method (The Ministry of Finance, 2013, The Ministry of Finance, 2014d). These documents, however, only provide the general principles of the procurement methods and lack the detailed operational procedures required of the contracting authority.

Public engagement (E9)

A user satisfaction survey (E9-1) at the operational stage of PPP is required by the governments in both the UK and China. The UK government deems this as a practical mechanism, to measure the quality of the contractor's service, through feedback from users. The government thus proposes a mechanism to monitor performance effectively and motivate the contractor to provide better service. Communication throughout a project life-cycle (E9-2) is required in the UK terms (HM Treasury, 2007), which is not reflected in Chinese policy documents. In China, E9-1 was defined as a way of the government monitoring measurement but it lacks detailed guidance.

Communication throughout a project's life-cycle (E9-2) is required in the UK, but not required in the Chinese policy. HM Treasury in the UK indicates that all projects have a wide range of stakeholders, and users and consultation and communication with them should continue throughout the project (HM Treasury,

2007). This approach has, however, not yet in evidence in the requirements of the authorities in China. Interviewees from China pointed out that, ‘the public engagement is less urgent for infrastructure development’, while ‘there are more important issues, such as the adherence to time and cost control for public projects’.

Transparency (E10)

The UK and Chinese governments portray rather different attitudes concerning transparency with PPP. The UK government demands much greater transparency as regards project financial data than is the case in China. Based on International Financial Reporting Standards (IFRS), the UK government publishes PFI liabilities as regards the Whole of Government Accounts (WGA). HM Treasury regularly publishes the amounts of unitary charges as regards all signed PFI projects, in subsequent years. The public sector becomes a co-investor in PPP, in order to gain access to project data, which significantly increases the transparency of project finance. In order to improve the transparency of the project approval process (E10-2), the UK government introduced the Business Case Approval Tracker in 2013, to illustrate and update the flow chart of the entire approval process of a PPP project. This greatly improves the visualisation and transparency of the project approval process and reduces the additional bidding costs for the private sector.

In China, part of the project financial data, such as the total investment, investor, and annual expenditure, is published on the PPP database; however, the government’s budget and approval process for PPP projects are not as transparent to the public.

Table4. Comparison of Process control

E8 Tendering		The UK	China
process control			
E8-1	Project tendering preparation	Treasury Project Preparation Check Project Review Group (PRG)	Provision 10 to 12 in <i>Guidelines for Public Private Partnership Model (Trial)</i> (The Ministry of Finance, 2014b)
E8-2	Improving public-sector procurement capability	Centralised PPP procurement units Time limit for the competitive tendering phase	No requirement
E8-3	Competitive dialogue tendering procedures	Detailed guidance: <i>Guidance on competitive dialogue</i> (OGC and HM Treasury, 2008)	Principles guidance: <i>Administrative measures on non-tendering procurement methods of government procurement</i> (The Ministry of Finance, 2013) Principles guidance: <i>Interim measures on competitive negotiations procurement methods of government procurement</i>

E9 Public engagement

E9-1	User	Detailed guidance: in <i>Standardisation of PF2 Contracts</i> to conduct it (HM Treasury, 2012b)	Provision 2-3-2-2 in <i>PPP Project Contract Guide (Trial)</i> (The Ministry of Finance, 2014a)
E9-2	Through life communication through project life cycle	Through life communicate with users Reviewing and revising communication strategy in the post procurement phases Users involving in contract management Regular meetings with user representatives	No requirement

E10 Transparency

E10-1	Finance	Budget management: PFI liabilities Publish the project financial data: <ul style="list-style-type: none">the public sector's investmentsequity return of each PPP project Standardised financial forms <ul style="list-style-type: none"><i>Equity Return Form</i><i>Information Required at Financial Close</i>	PPP expenditure included into budget arrangement Publish the project financial data on the database: <ul style="list-style-type: none">the total investmentinvestorsthe future annual expenditure
E10-2	Approval	Business Case Approval Tracker	No requirement

The pattern discerned in the comparative analysis provides a sufficient basis for the evaluation and comparison of the PPP governance, as between the UK and China. The primary findings gained endorsement from all the experts in the interview survey.

5. Implications for practice

Dean (2012) defines government as a multiplicity of authorities and agencies conducting rational activities, by employing various techniques and forms of knowledge for definite but changing outcomes. Governmentality is the conduct of conduct (Foucault, 1991). Applying PPP to public procurement requires appropriate methods of governance. Based on the findings from the comparison study and interview survey, we proposed a conceptual model (See Figure 2), to define the governing of PPP through a governmentality lens.

Figure 2. The conceptual model of PPP governance

At the apex of the image, the centralised structure of institutions helps the authorities to form rationality, while the standardised codes provide them with the necessary techniques and form of knowledge, to control the process and achieve the desired outcomes.

In the central section, *Codes* plays an important role in transferring the correct rationality from institutes and providing compulsory techniques and knowledge to the local authorities in charge of PPP projects in practice. Regulation, combined with a contract, can avoid unacceptable deviation and protect the public interest; they are thus essential for the government in governing PPP (Marques, 2017; Marques, 2018). The two countries share similar aims and scope in their *Codes*, nevertheless, the development depth and clarity of guidance diverge. Although the government documents in China have addressed each of these sub-elements, the guidance appears lacking in detail. During the interview survey, experts suggested that ‘the Chinese government needs to find suitable means to promote potential private financing tools, without disturbing the financial system ...’ It is also acknowledged that, a ‘standardised assessment system will benefit the monitoring of the PPP projects’.

The comparison reveals that both countries have realised and intend to benefit from the key perceived benefits of PPP, in using private capital for more rapidly financing infrastructure development and using private professionalisation to transform government functions. The UK government has, however, established a wider range of goals for the implementation of PPP. For instance, the UK government expects to achieve transparency and flexibility of public procurement through PPP and to shorten the procurement period of private finance contracts (HM Treasury, 2018). As commented by interviewees from the UK, ‘PPP has been associated with the macro-level of sustainability target’, and ‘raises the requirements for PPP projects toward sustainable development objectives’. As a result, the stakeholders involved in PPP in the UK, ‘pay more attention to the delivery of sustainability through whole life design, green construction, and low energy operation’. In terms of China’s response, education through training and

guidance reflecting macro-objectives, can help the implementing authorities to gain better perceptions of PPP and form reasonable rationality in governing PPP projects.

The current inadequacy regarding *Codes*, as is the case in China, leads to poor performance on *Process control*, among which a number of sub-elements have been ignored, such as through life communication, transparency of approval, and improving public-sector procurement capability in the control of the process. Previous research based on a case study in China, has also pointed out the importance of increasing transparency in the tendering process of PPP (Pu, et al., 2019). The Chinese government is recommended to, ‘strengthen the standardisation of the instruments, measures, and tools to guide the practitioners’, involved in PPP projects. Another observation of this research is that the gap between the two countries on *Process Control* is caused by the difference in the governments’ perceptions of PPP. Both countries have realised and intend to continue to benefit from the key capability of PPP in using private capital for more rapidly financing infrastructure development and private professionalisation to transform government functions. Moreover, the UK government has set goals to achieve transparency and flexibility in public procurement through PPP and to shorten the procurement period of private finance contracts (HM Treasury, 2018). For China, education through training and guidance reflecting macro-objectives, can help the implementing authorities gain better perceptions of PPP and form reasonable rationality in governing PPP projects. More importantly, the central government must fully accept PPP as a multi-functional tool and set up multi-objectives for the implementation of PPP, concerning long-term and macro-level benefits, hence to benefit most from the use of PPP.

It has been well acknowledged that whole life costing plays an important role in construction projects, in achieving the best VfM in the long-term development and operation life cycle (Park, 2009; Olubodun et al., 2010; Goh and Sun, 2016). In practice, however, the lack of a unified data structure for whole life costing in China means that the public sectors feel it is, difficult to carry out benchmarking between projects and identify ‘best practice’ for the industry, as indicated by some interviewees. It is thus crucial for the Chinese government to enhance the understanding of both the public and private sectors on this concept and to provide tools and measures to guide the implementation of whole life costing in PPP.

Public engagement is a key principle of governance for sustainability (Dinica, 2017). The UK government attaches great importance to E9 and E10 because it is felt that, they encourage user satisfaction and protect the public interest, through PPP (HM Treasury, 2012a; M. Khoteeva and D. Khoteeva, 2017). The interviews revealed that the public sector in China commonly holds ‘the delivering of public projects is normally deemed as the full responsibility of the government’. Consequently, public scrutiny becomes weak in ensuring the quality performance of PPP projects. As one of the primary goals of PPP is to provide better quality

public service to societies, the Chinese government should encourage public involvement, as a means of monitoring project performance. The increase in transparency of the PPP control process can benefit both public engagement and accountability.

PPP governance in the UK is particularly strong as regards the standardisation of the criteria and methods used in PPP process control, which promote, ‘fair play’ in a market economy under neoliberal governmentality. The process control, therefore, not only constrains the behaviour of the private sector but also that of the public sector. In China, the process control mostly targets the private sector, while regulating the behaviour of the public sector has been paid less heed by the central government. This can, ‘harm the efficiency and accountability of the project’, therefore, should be rectified, by introducing more measures to evaluate the performance of the public sector in PPP.

China, as an emerging PPP market, will need a certain period of time to further regulation and for both the general public and government to have a better perception and understanding of the concept. Without the right approach to governing PPP, the public sector can easily lose their focus, given the complex structure of the project and the long contractual period of involvement with the private sector. Since 2017, the Chinese government has carried out a series of PPP clean-up actions, which, to a degree, has reduced irregularities in the PPP market (The Ministry of Finance, 2017b). The effectiveness of this clean-up action has yet to be made clear to the public.

6. Conclusion

PPP has become an important means of providing public services and infrastructure worldwide; however, there is still a lack of a clear framework of PPP governance for the global PPP market. This research adopts a theoretical lens of governmentality, to examine the influence of governance on PPP implementation, by comparing the governance practices in the UK and China and provides a framework for PPP governance, by means of a conceptual model. In answering the research questions, an analytical framework is developed to facilitate the theoretical comparative analysis. This study contributes to the literature at the macro-level evaluation and offers a comparative review of the governance of PPP.

While the implementation of PPP governance as applied in China and the UK shares similarities, it is clear that the political and economic contexts of governance prevailing in these countries are reflected in differences in terms of regulating, controlling, and monitoring of PPPs. During the past decades of implementing PPP, the UK government has developed comprehensive approaches in three propositions concerning governmentality, whereas the Chinese government, as a new user of PPP, currently lacks *Codes* and is weak in *Process control*. Our study points out that, the gap in governmentality approaches in the two countries lies in their governance approaches. In addition, the perception of

the government as regards the concept of PPP significantly affects their approach to governing PPP.

A conceptual model is proposed for PPP governance and explains the role of government in governing PPP, in order to improve public utilities, services, and infrastructure. Our analysis reveals weaknesses in PPP governance in China concerning entry standards, calculation methods for payment and deduction, whole life costing, sustainability, service assessment, public participation, and transparency. Suggestions are given to improve PPP governance by the Chinese government, with the largest PPP market emerging in the country. The top priority for the Chinese government is to reconsider their perception of the meaning of PPP and recognise its multiple functions and potential. Only on this basis, with the introduction of wider macro-objectives and relevant regulations for PPP projects, can business be conducted. Furthermore, the standardisation of instruments, measures, and assessment criteria relating to PPPs are urgently needed to guide practitioners in the PPP market in China. Other suggestions include expanding private financing sources, helping local authorities in better understanding PPP through training and education, increasing the transparency of PPP projects, promoting the use of whole life costing tools, and encouraging public engagement.

The research contributes to the body of knowledge concerning PPP governance generally, by providing a conceptual model and assessment tool for PPP governance. The governments of different countries can benefit from the comparison framework, in terms of evaluating the effectiveness of the way they govern PPP, by comparing with the other practices in the global PPP market, as well as identifying and targeting loopholes in their PPP governance.

The study is based on qualitative data; hence, comparative quantitative analyses, for instance on the efficiency and effectiveness of PPP governance could be the focus of future research.

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