



Risk-bearing capacity as a new dimension to the analysis of project governance

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Abstract

Project governance has been recognized as a critical factor to the success of project delivery in practice. Accordingly, this research aims to demonstrate that the notion of risk-bearing capacity (RBC) can be drawn upon as a new dimension to the analysis and design of project governance. An effort is made to link this concept with the definitions of governance employed within the literature of transaction cost economics and corporate governance. The RBC approach distinguishes itself from extant views of project governance through its ability to quantitatively integrate organizational (e.g., delivery system), contractual (e.g., risk-sharing ratio) and financial (e.g., insurance cover) measures. This novel approach provides an avenue for incorporating the project's historical construction and operating data into the design of project governance; an advantage with the potential to exponentially increase as a torrent of digital data is made available through the deployment of emergent information technologies (e.g. building information modelling).

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1. Introduction

Project governance is increasingly acknowledged as a critical factor for the successful delivery of construction projects (HM Treasury, 2007). Whereas the root of “governance” can be traced to the Latin word “gubernare” (meaning: steering) (Müller, 2010), this term was not popularly used within social sciences literature until the last two decades (Dixit, 2009). The prevalent acceptance of this term is primarily attributed to the development of organizational economics in general and Oliver Williamson’s transaction cost economics (TCE) in particular. As reviewed by Biesenthal and Wilden (2014), these approaches (TCE and agency theory) are influential in shaping the way project governance is analyzed within project management literature (Müller, 2009, 2010; Müller and Turner, 2005; Winch, 2001).

The current state of project governance literature is qualitative in nature. This research therefore represents a departure from this

tradition by developing a quantitative approach to the study of project governance. There are two reasons for seeking a complementary theoretical foundation: First, organizational economics is normally developed within the context of generic organizational forms (e.g., market, hierarchy, hybrid) with characteristics distinct from project organizations, so resorting to more rudimentary principles of governance as the starting point of theorization could provide a new frontier for the study of project governance. Second, both TCE and agency theory are formalizable (Gibbons, 2005a), and taking any step towards this end could exploit their modelling power to a greater extent.

In seeking a new dimension for the study of project governance, this research probes the fundamental function that governance structures are supposed to serve within TCE. Whilst Williamson defines governance structure in fairly broad terms, in its application the definition must be modified to accommodate context-specific subtleties. Corporate governance is chosen as a focus application area for exploration because of its strong influence on prior studies of project governance. In principle, the central role of governance structures is to maintain the order of transactions. In the course of

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project implementation, order may be disturbed by random risks or opportunism-induced behavioural uncertainty. How to efficiently manage risks should be placed in the center of project governance design. In current construction practice, three types of means are commonly employed to manage risks. Organizationally, the choice of delivery systems (e.g., traditional procurement, relational contracting) could change the intensity of behavioural uncertainty (Ive and Chang, 2007). Contractually, the choice of contract forms (e.g., lump-sum, cost-plus) can shift risk exposure between parties (Smith et al., 2006). Financially, the use of financial protection (e.g., bonding, insurance) can reduce a project's overall risk exposure. How to efficiently manage transactional hazards through these three means is the overarching issue in the design of project governance. This research maintains that the concept of risk-bearing capacity can provide a coherent basis for integrating the decisions of the three means and thus shed new light on the analysis of project governance. This assertion is substantiated by a mathematical model that allows the choice of optimal risk-sharing ratio and insurance decisions to be determined simultaneously. A great benefit of the risk-bearing capacity approach (hereafter the RBC approach) lies in the ability to harness project lifecycle data (costs, risks and financial protections) to inform upon the design of project governance. The strength of this approach in quantifiability will grow significant as enormous new data becomes available resulting from the proliferation of building information modelling (BIM) and sensory instruments. The study of project governance is, in itself, a bona fide multidisciplinary undertaking (Söderlund, 2004) and it is hoped that the theoretical contribution of this research towards the development of the RBC approach can provide an alternative to the design of project governance. Whilst this research focuses on the context of projects involving a large fixed lump-sum investment (i.e., capital projects), the arguments can be readily applied to the analysis of other types of projects (i.e., IT projects).

Introductions aside, this paper contains five sections. In Section 2, the existing studies of project governance are reviewed so as to underscore the existence of a knowledge gap in the lack of a quantitative alternative to project governance analysis. A comprehensive approach is taken by revisiting the way governance structures are originally defined within TCE literature and in what ways they have been adapted in applications to corporate governance research. In Section 3, an attempt is made to illuminate the potential of the RBC approach as a keystone for project governance analysis through the exposition of its theoretical underpinnings, the problems it can address, and its feasibility in integrating procurement decisions. Section 4 provides a discussion of the significance and implications of the new approach. A concluding section follows.

2. Literature review

2.1. Prior studies on project governance

As evidenced in the upcoming special issue on project governance in this journal, governance issues provide a vibrant research area. Following the OECD's definition of corporate governance (Organisation for Economic Cooperation

Development, 2004), project governance is normally defined as “the structure through which the objectives of the project are set, and the means of attaining those objectives and monitoring performance are determined” (p.311) (Turner, 2009). Sometimes, project governance also cover the organizational issues arising in the interface between project and parent organization (e.g., Project Management Office), and within the parent organization of the project investor (corporate governance) (Winch, 2014). The approaches employed in the analysis of project governance are as diverse as the study of organizations itself, including agency theory, transaction cost economics, shareholder theory and resource dependency theory (Biesenthal and Wilden, 2014). Of them, only the works drawing on agency theory and TCE are directly relevant to the current research.

Since the 1980s, the potential of TCE has been recognized by project management researchers (see Chang and Chou (2014) for a review). Two types of TCE applications should be distinguished: one stream draws on the concept of transaction costs in forming part of the explanation (e.g., van den Hurk and Verhoest (2014)) whilst the other attempts to build a TCE based theory of project organizations. The former by far outnumbers the latter within existing literature, seemingly owed to TCE's ability to exist alongside other arguments. Whilst synthesis can enrich a multidisciplinary research field, being content with ad hoc applications of TCE arguments could inhibit the advancement of theoretical understanding. Among the few theorizing attempts, Winch (2001) builds on TCE to analyze the choice of both horizontal governance (for transactions between the owner and her suppliers) and vertical governance (for transactions between first-tier contractors and subcontractors down the supply chain) in construction. He maintains that the arrangement of traditional design-bid-construction systems can be seen as Williamson's ‘trilateral governance’ since the designer assumes the role of control actor in charge of verifying performance, facilitating negotiations, and assisting in dispute resolutions. This paper expounds the concept of ‘professional governance’ to capture the key features of traditional procurement systems, including the separation of design from construction (with the effect of mitigating ex post opportunism), standardized intangibility of the service (ensuring the owner knows how services will be delivered), performance default remedy supported by the professional institution (e.g., Institute of Civil Engineers), unlimited personal liability of the designer, and high reputational damages at risk in the event of sub-performance. Contracts can achieve “hierarchical effects” by specifying authority systems, providing incentive systems, using administered pricing systems, providing conflict resolution procedures, and standardized operating procedures. As regards the governing of supply chains, the contractor is advised to choose one of four generic governance structures (sequential spot market, quasi-firm, consortium, joint venture) on the basis of asset specificity and frequency. Whilst Winch (2001) is soundly grounded in the TCE framework of ‘make or buy’ decisions, it is worth noting that the evolution of TCE has been influenced by the experience of antitrust law enforcement (Williamson, 1996). This is why the main interests of TCE exist on the polar types of governance (market and hierarchy). When it comes to the governance decisions of ‘permanent’

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