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## RELATIONAL GOVERNANCE AS MEDIATOR OF CONTRACTUAL GOVERNANCE IN PUBLIC PRIVATE PARTNERSHIPS

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### ABSTRACT

This research provides empirical evidence that relational governance can play a mediating role between contractual governance and project performance of Public Private Partnerships. Based on the analysis of a survey of PPP practitioners in the Netherlands, using Partial Least Squares Modeling we found that organizational rules for organizing the day-to-day interaction between partners and partners' trust mediate the relationship between contractual arrangements and project performance. These findings are aligned with the idea of tripartite governance conceptualization, which states that both economic incentives and hierarchical relationships formalized in contract agreements require to be in interplay with socially based mechanisms to actually guarantee the integrity of value creation in PPPs. Theoretical discussion elaborates on *enabling* and *compensating* underlying mechanisms of the relational governance mediation role. Managers can find in relational governance, and particularly in relational norms, a leverage point for bridging the long-term contractual obligations with the day-to-day partners' contribution.

**KEYWORDS:** PPP – Contractual Governance – Relational Governance – Partial Least Square Modeling

### INTRODUCTION

Public-Private Partnerships have gained increasing popularity as an alternative to organize the economic transaction between public and private organizations for the provision of public infrastructure (Boardman, Greve, & Hodge, 2015; OECD, 2012). As a policy prescription, the World Bank defines PPP as “long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management and payment is linked to performance” (World-Bank, 2014, p. 19). This conceptualization ascribes to “PPPs” a specific kind of inter-organizational arrangement and decision-making procedure to guarantee the integrity of transactions between private and public partners in a process of value co-creation. From this interpretation, PPP entails a specific mode of governance for the provision of public infrastructure that appears to be superior to traditional forms of organizing public and private transactions and relations (Gomez-Ibanez, 2015). Nevertheless, previous research not only reveals that PPP is a label that includes a range of different alternatives for organizing the economic interchange between public and private parties along different dimensions (Hodge & Greve, 2010), but it also suggests that establishing alternative forms of economic exchange between public and private sector does not automatically lead to improved performance. There is mixed evidence of the performance of PPPs in terms of delivering infrastructure on time and on budget (Hodge & Greve, 2007, 2010;

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Van den Hurk & Verhoest, 2015), satisfying the needs of taxpayers and end-users (Hodge & Greve, 2010), providing flexibility along the project cycle (Blanken, 2008; Cruz & Marques, 2013), and providing satisfactory outcomes according to the perception of public and private managers (Verweij, 2015). PPP is not a magical recipe to overcome typical governance problems of infrastructure projects such as displaced agency, one-off, uncertain and highly asset-specific nature. Instead, PPP brings new governance issues on the table given the long-term character of the relationships created by PPP contracts and the multiphase integration along the project cycle (Levitt, Henisz, & Settel, 2009).

Finding an answer to the question of how to organize the governing interface between public and private agents in the delivery of public infrastructure projects is a persistent challenge for practitioners and researchers. While at the beginning the principles of New Public Management set the PPP discussion in terms of the dichotomy between market vs. public bureaucracies (Altamirano, 2007), current conceptual frameworks are aligned with the tripartite conceptualization of governance (Levitt et al., 2014), accounting for the complex interplay between authority, prices and trust in specific configurations of social relationships along hierarchies, markets and networks structures (Ahola, Ruuska, Artto, & Kujala, 2014; Bradach & Eccles, 1989; Rhodes, 2007). From this perspective, PPPs are better understood as long-term temporal organizations embedded in loosely couple-systems (Dubois & Gadde, 2002), whose governance design requires balancing economic incentives, administrative provisions, and collaborative practices for coordination of public and private organizations, and their extended network. In this regard, researchers integrate original insights provided by the Transaction Cost Economics (TCE) tradition (Williamson, 1981), with non-economic understanding of social relations and practices in organizations within larger networks based on Social Exchange Theory (Blau, 1964; Cook & Emerson, 1978), Relational Exchange Theory (Kaufmann & Dant, 1992; Macneil, 1980) and alternative Theories of Governmentality (Clegg, Pitsis, Rura-Polley, & Marosszeky, 2002).

From an empirical perspective, the governance challenge requires exploring and testing extended conceptual models that transcend the assumptions of pure contractual governance, accounting also for political, social, cultural and psychological drivers behind cooperation and collaboration. A number of studies already discard the existence of a direct relationship between formal contractual configurations and perceived performance of PPP projects (Chen & Manley, 2014) (Klijn & Koopenjan, 2015; Nederhand & Klijn, 2015). However, there is an ongoing debate about the extent to which formal contracts and informal relations complement or substitute each other as governance mechanism for the economic exchange between organizations (Hoezen, 2012; Poppo & Zenger, 2002). While there is increasing evidence about their complementary nature in the delivery of infrastructure projects, there are also inconsistent findings that make the complementarity claim a weak one (Cao & Lumineau, 2015). Then, a more fruitful research endeavor should provide deeper insights into “how” and “when” contractual and relational governance complement each other, and what circumstances moderate this interaction in relation to project performance. As a contribution to this discussion, the aim of this paper is to provide a quantitative assessment of the interplay between contractual and relational governance in PPPs. In particular, we explore the interaction of relational and contractual governance in PPP project. As a starting point, we review theoretical considerations on contractual and relational governance interplay. We continue with the empirical assessment of the assumed interplay based on an exploratory analysis of a survey among private and public managers involved in PPP projects in the Netherlands. We use Partial Least Squares Structural

Equation Modeling (PLS-SEM) for the empirical analysis. Our final discussion addresses the role of contractual governance as enabler of relational governance, the role of relational governance as compensator of contractual governance, and the boundaries of project governance as intentional designs.

## **CONCEPTUAL BACKGROUND**

### **Contractual Governance for Inter-organizational exchange**

From the traditional perspective of TCE, economic transactions are exposed to three fundamental problems: the possibility that partners do not invest their best efforts in the process of value co-creation (opportunism); the exposure to economic changes during the contract period (uncertainty); and, the possibility of emerging disputes between partners (Chang, 2013). Governance structures consist of a number of inter-organizational configurations of economic incentives, administrative controls and/or contractual arrangements designed to minimize these transactional hazards. Nevertheless, there is not such an organizational silver-bullet -a specific configuration of economic incentives, administrative controls and contractual arrangements- that suits every kind of transaction. Governance designs must be tailored to the characteristics of the specific transaction (Kivleniece, 2013; Kivleniece & Quelin, 2012; Williamson, 1981).

When costs of “make” options are high (investment, know-how, time, material), market incentives in a competitive market are sufficient to guarantee the integrity of “buy” option (Rangan, Samii, & Van Wassenhove, 2006). The terms of the interchange are formalized in a contractual setting, which establishes obligations to perform particular actions in the future. On the contrary, when costs of “buy” options are high (ex-ante searching, measuring obligations, negotiating, ex post coordinating, monitoring and enforcing), administrative controls within hierarchical organizations are more suitable to create value. When both costs are considerably important, hybrid organizations should be considered (Ménard, 1996). The latter is the typical case of infrastructure projects that involve the delivery of highly specific assets, where partners are exposed to high levels of uncertainty and opportunistic behavior once they compromised their resources in a “sunk investment” (Winch, 2010). Then, there is a significant value gap between the current use of resources within the existing transaction and the best-alternative use in other transactions, leading to a lock-in relation between partners during the duration of the project (Blanken, 2008). Being a single organizational arrangement between sovereign organizations (Borys & Jemison, 1989), hybrids combine administrative controls and economic incentives for guaranteeing the integrity of the transaction.

Compared to the classical contractual regime contractual governance framed within the neo-classical regime not only establishes a non-anonymous relationship between parties, but it defines also a framework for resolving unforeseen disputes (Joskow, 1988). This is due to the impossibility to define ex-ante all eventual circumstances that might hinder the integrity of the transaction in the future. Then, it is expected that a third party settles the dispute, interpreting conflicting circumstances under the light of initial negotiation between these non-anonymous contracting parties. Naturally, the third party is legally entitled to resolve disputes between partners and its power is granted by the wider institutional environment (Chang, 2013). In this regard, formal contracts conceive exchange in terms of specific obligations (Macneil, 1980), which are required to be clarified by a third actor in the case of unforeseen disputes about the specific nature of the mutual commitment.

### **Relational Governance for Inter-organizational exchange**

Nevertheless, the economic exchange between partners governed by the contractual regime is only one dimension of the actual non-anonymous relationship between partners. Additionally, partners' relationships are also defined by social exchanges, which entail unspecific obligations between parties, and the nature of their returns cannot be bargained (Cropanzano & Mitchell, 2005). These returns regard non-pecuniary goods including feelings of personal obligation, gratitude, trust, and the general commitment to maintain a cooperative relationship overtime. When the social dimension is overlooked, enforcing contractual governance safeguards for economic interchange might be counterproductive (Macneil, 1980). In particular, implementing formal controls and making legal claims can (1) be an expression of distrust itself; or, (2) trigger distrust to the extent of which it is perceived as non-cooperative behavior. In other words, the neo-classical contract regime might encourage adversarial relations, rather than preventing opportunistic behaviors (Poppo & Zenger, 2002).

The recognition that social relationships are decisive for guaranteeing the integrity of economic transaction has led to the increasing interest about the nature and dynamics of relational governance as an alternative form of governance. In the field of inter-organizational relations, relational governance is mainly developed upon the insights from Relational Exchange Theory (Kaufmann & Dant, 1992; Macneil, 1980) and Social Exchange Theory (Blau, 1964; Cook & Emerson, 1978). RET focuses on the design of defined relation norms and shared expectations (e.g. flexibility, information exchange and solidarity), being the type of social exchange that defines the quality of partners' relationship and economic performance. SET focuses on trust and unspecified obligations of reciprocity to maintain commitment and cooperation; being the quality of relationship that alters the nature of social exchanges and economic performance. While RET assumes that defined relational norms lead to undefined trust/commitment that impacts economic performance, SET supposes undefined trust/commitment as a precursor of defined relational norms needed for economic performance. The difficulty of establishing a definitive causal order is not a matter of a single stimulus-response, but stems from a process that is better understood as a reinforcing loop over time: "the rung for which one was originally reaching becomes a foothold for one's next step. The goal achieved at one step provides the foundation for an even higher climb" (Cropanzano & Mitchell, 2005, p. 890). Scholars integrate these two theoretical approaches, highlighting the reinforcing effects between defined relational norms and the actual emergence of trust and commitment between partners (Palmatier, Dant, & Grewal, 2007).

### **Contractual and Relational Governance interplay**

Notwithstanding the reinforcing relationship between trust/commitment and relational norms within relational governance, the interplay between relational and contractual governance seems to be more complex. Literature highlights significant limitations when considered in isolation encouraging a complementary perspective, but it also accounts for emerging trade-offs from different underlying behavioral assumptions suggesting a substitutive relation. A recent meta-analysis of 149 empirical studies of inter-organizational relationships (IORs) (Cao & Lumineau, 2015) reviewed the degree of complementarity/substitutivity between contractual governance and relational governance. It distinguished two aspects: (1) the interplay in terms of mutual relationship of the two governance mechanism; and (2) the joint impact on performance in terms of opportunism, satisfaction and relationship performance. Explanatory accounts usually conflate both aspects, assuming that "when contractual and relational governance are reinforcing

or offsetting each other, their joint effects will increase or decrease performance automatically” (Cao & Lumineau, 2015, p. 29).

According to the empirical meta-analysis, the complementary argument is generally supported. However, joint effects should be discarded for opportunism as there is not a direct significant relationship between contractual governance and opportunism. Additionally, the authors warn about the existence of non-consistent empirical findings, highlighting the contingent nature of contractual and relational complementarity. Besides the moderating effect of the exogenous institutional environment<sup>4</sup>, endogenous project characteristic such as relationship length and relationship type may moderate the interplay between contractual and relational governance as well. Relationship length can have a positive moderating effect on the complementarity between contractual and relational governance. Regarding relationship type, “trust and contracts are independent in cross-border IORs and strategic alliances while complementary in vertical IORs (outsourcing, buyer-supplier, and manufacturer-distribution)” (Cao & Lumineau, 2015, p. 31). Different economic relationships involve different exchange hazards, which can negatively moderate the complementarity between contractual and relational governance if the relationship is rather independent and competitive than vertical. When the economic relationship shows greater inter-dependence between parties, complementary effects are stronger.

In comparison to inter-organizational relationships that are undefined over time, construction projects are highly coupled, temporal systems embedded in long-term and loosely coupled systems (Dubois & Gadde, 2002). This embeddedness suggests a complex grid of relational, sequential and pooled interdependencies as pre-existing factors of project coalitions (Bygballe, Håkansson, & Jahre, 2013). Formal contracts define the relational boundaries of a temporal project coalition imposing a number of specific but temporal obligations, interaction rules and close interdependencies over pre-existing, diffused, and long-lasting relationships in the network. Traditional contracting practices were initially considered as the pivotal element for guaranteeing the integrity of partners’ transaction and value co-creation. Nevertheless, the evidence revealed that traditional contracting practices actually encouraged additional opportunistic issues, given the existence of displaced agency problems along the project life cycle (Levitt et al., 2009). Coalition members responsible for one stage have incentives to shift the cost burden to other project participants under the pressure of competitive tendering. In this context the concept of “relational contracting” emerges as a reaction against the inherent opportunism in traditional contracting, highlighting the need of considering more collaborative and integrated approaches as complementary elements of contractual governance in the delivery of construction projects (Bygballe, Dewulf, Levitt, Carrillo, & Chinowsky, 2013; Chen & Manley, 2014; Love, Davis, Chevis, & Edwards, 2010; Rahman & Kumaraswamy, 2004).

Relational contracting principles support the development of relational project delivery arrangements (RPDAs), which define complementary relationships between relational and contractual governance mechanisms (Lahdenperä, 2012). RPDAs include project partnering, project alliancing and integrated project delivery and provide different weights to key integration features such as teamwork premises, operational procedures, and administrative consistency. Theoretically, the fundamentals of relational contracting elaborate upon the critics from RET and SET to classical and neo-classical theory, insisting on the impossibility of setting a definitive risk allocation given unforeseen events along the project life cycle and worsened by framing

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<sup>4</sup> Cao and Lumineau includes effectiveness of legal system, the degree of cultural collectivism and power distance.

relationships exclusively as legal obligations. Relational contracting operates over the complex interaction between legal obligations, socio-economic relations and behavioral forces (Rahman & Kumaraswamy, 2004). Furthermore, empirical evidence reveals that closer collaboration and higher level of integration have an important impact on the reduction in cost and waste, and project performance improvement in general (Rutten, Dorée, & Halman, 2009).

Relational contracting not only advocates that relational governance can be intentionally encouraged by specific contractual structures, but it also stands for the existence of a larger causal path between contractual governance and project performance. Collaborative relationships emerge not only through working interaction in groups, but also through those working routines that are laid down in hierarchical or commercial arrangements. Therefore, it should be possible to identify formal contractual structures and decision making procedures at the tendering phase that promote collaboration and a win-win culture based on team-working, joint risk management and targeting optimal project performance. This initial configuration then generates a reinforcing loop between self-interested trust and social-oriented trust, the former being based on the expectations of direct rewards from cooperation and the latter backward-looking and based on shared values, moral positions and friendship (Rahman & Kumaraswamy, 2004). As value creation at project level depends on the capability to mobilize, coordinate and adjust various actors towards a well-defined objective in a clear boundary setting (Bygballe, Håkansson, et al., 2013), collaborative culture and resulting trusts increase mutual reliability on individual contribution to the conclusion of the project. Relational contracting principles consider dynamic relational scenarios where the past, present and future relations are interrelated, being a vehicle for sustaining ongoing relations and providing grounds for expecting future collaboration (Rahman & Kumaraswamy, 2004).

### **Relational and Contractual Governance for Public and Private Partnerships**

“The relationship between organizations within the public and private sectors is perceived to be crucial to the success of PPP projects because a poor relationship would easily lead to misunderstanding and conflict” (Tang, Shen, & Cheng, 2010). Nevertheless PPP projects have different levels of collaboration and managerial integration between public and private partners depending on the underlying value creation rationality. Levels of collaboration can range from “autonomous PPP” to “integrative PPP” ideal types, the former being contractual-oriented with high-powered incentive regime and the latter being relational-oriented requiring high levels of coordination between public and private counterparts (Rangan et al., 2006); (Kivleniece & Quelin, 2012). Autonomous modes of governance establish low levels of collaboration and integration to favor private-party discretionally, assuming that value creation is a result of efficiencies introduced by private rationality. In this relationship, the public partner assumes the role of “principal”, who must supervise private performance according to contractual provisions (e.g. functionality), and using as leverage the high-powered financial incentives included in the formal contract (e.g. availability fee). Integrative forms of governance establish high levels of collaboration and integration to favor shared managerial authority, assuming that value creation is the result of synergistic combinations of public and private resources. Rather than relying on high-powered economic incentives, partners’ behavior is governed by relational norms and shared expectations.

Whether the underlining value-creation rationality become manifest through the selected PPP mode of governance will be determined by internal and external project idiosyncrasies. Integrative mode of governance with strong emphasis on close collaboration and integration is

more suitable than autonomous mode of governance in the presence of high uncertainty from market/technological change and high exposure to social activism from stakeholders (Kivleniec & Quelin, 2012). Then, close collaboration and resulting trust will facilitate the adaptation of partner expectations to new market/technological circumstances. Active involvement of the public partner in managerial responsibilities is an asset when dealing with external stakeholders given the inherent legitimacy of public officers to address social conflicts (Rangan et al., 2006). However, when market/technological uncertainty and exposure to social activism are low, the value co-creation process can rely on autonomous contractual-oriented mode of governance (Kivleniec & Quelin, 2012). Here close collaboration is not necessary and even counter-productive. Additional relational activities may increase the number of social transactions in which parties are required to reach a shared vision, which might demand higher efforts and partner resources. In other words, tight collaboration in a presence of low technical and social uncertainty might lead to weaker efficiency due to lower-power incentives (Frant, 1996).

Political issues also might restrict the possibility of close collaboration and integration between public and private parties in the setting of PPP (Hodge & Greve, 2010). From the perspective of the public opinion and constituents, tight relationships with private actors might raise concerns about public actor probity. While close collaboration does not have any restrictions between private arrangements, contracting parties in the public sector need to maintain arm's length relationships with the private sector to avoid allegation of corruption, guarantee competitive tendering processes, and lower the rights to offer future relationships to contractors (Ke, Ling, & Ning, 2013). This is particularly relevant for democratic countries, where the main barriers to implement relational contracting are the accountability and transparency concerns arising from a close relationship between public officers and private companies. (Ling, Ong, Ke, Wang, & Zou, 2014). From the perspective of private actors, the strategic nature of public infrastructure in the public agenda increases incentives for political intervention and deteriorates the contract power and its legal enforcing mechanisms (Levitt et al., 2009). Then, close collaboration implies increasing exposure to politically driven interests to shape the project and orient decisions according to specific political agenda.

### **Conceptual model**

Complementary interplay between contractual and relational governance seems to be a more effective mode of governance compared to traditional forms restricted to economic incentives, hierarchical relations and contractual regimes. Current PPP governance project practices include the double effort of intentionally designing formal and informal governance structures, which at work trigger attitudes and behaviors aligned with the mission of the project. To explore the empirical grounds of this conceptualization, our model considers four empirically testable concepts: “Contractual Governance”, “Project Relational Norms”, “Partners trust”, “Partner contribution” and “Project performance”.

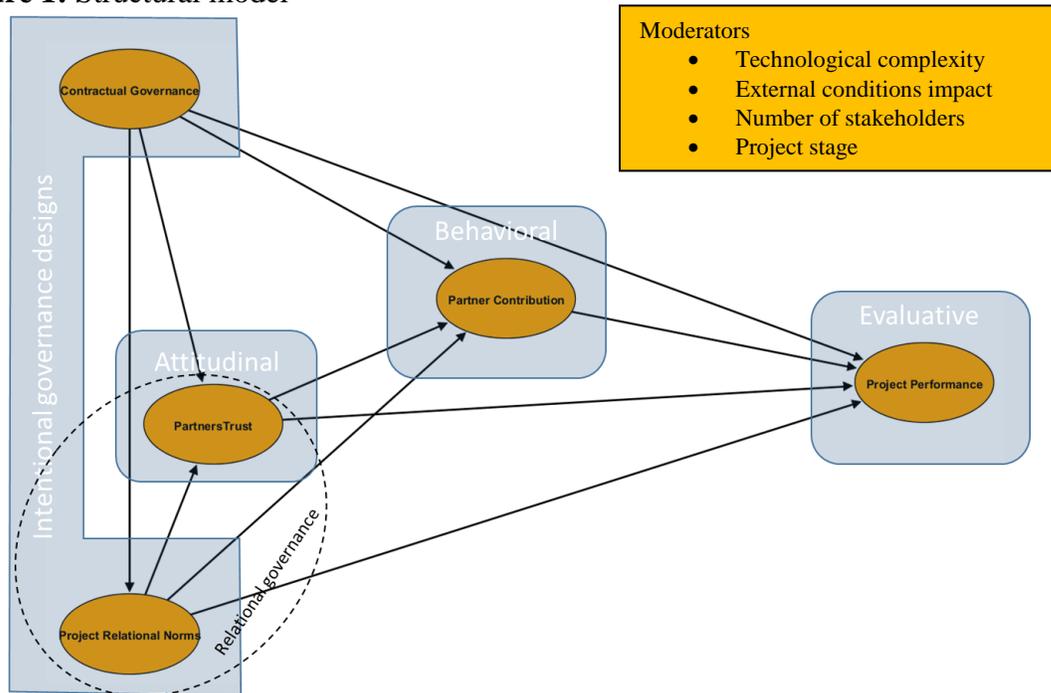
“Contractual governance” accounts for the intentional and formal governance design, established as contractual obligations susceptible to be enforced by legal means. This includes the principles for establishing, enforcing and adapting defined legal obligations between partners (Chang, 2013; Rahman & Kumaraswamy, 2004; Williamson, 1981, 1991). From its part, “Project Relational Norms” accounts for the intentional but informal governance design, established as a non-binding organizational rules for organizing the day-to-day partners interaction sanctioned by the shared expectation of non-opportunistic behavior between partners. (Kaufmann & Dant, 1992; Macneil, 1980). In our model “Contractual Governance” is a

necessary condition for the existence of “Project Relational Norms”, as the former set the boundaries of a partnership in terms of obligations, roles and mission of the project (Bygballe, Håkansson, et al., 2013). Therefore, “Contractual Governance” is expected to furnish and shape “Project Relational Norms” for the temporal PPP project coalition, aside from the existence of long-lasting relations at network level.

Being intentional designs, “Contractual Governance” and “Project Relational Norms” are expected to encourage “Partners Trust” and “Partner Contribution”. “Partner Trust” is the attitudinal component of relational governance that cannot be intentionally created and which value return cannot be bargained (Cropanzano & Mitchell, 2005) (Rahman & Kumaraswamy, 2004). Then, “Partner Trust” emerges as a feeling of mutual reciprocity favored by appropriated configuration of formal and informal rules of interaction. Intentional governance designs (Contractual Governance and Project Relational Norms) together with “Partners trust” as attitudinal predisposition of reciprocity lead to “Partners Contribution”, which captures the actual collaboration activity/behavior during the process of completing and delivering the project. Then, “Partners Contribution” is an intermediate collaborative working which finally leads to the desired “Project Performance”.

Our proposed structural model (Figure 1) captures these potential relations with the purpose of exploring different non-recursive paths of causality that can be deduced from the causal chain: Contractual governance -> Project relational norms -> Partners trust -> Partners contribution to the Project -> Project performance. General PPP project characteristics such as technological complexity, external conditions impact, number of stakeholders and project stage are considered as factors that possibly moderate the strength of the causal relationships assuming that close collaboration between PPP partners is more accentuated for high level of technical complexity, external uncertainty and higher number of external stakeholders (Rangan et al., 2006); (Kivleniece & Quelin, 2012).

**Figure 1:** Structural model



## **RESEARCH DESIGN**

### **Data collection**

We propose an exploratory empirical research to investigate the interplay between contractual and relationship governance represented in Figure 1, and the possible moderating effects. Our empirical study is based on a questionnaire survey among private and public managers involved in officially known PPP projects in the Netherlands. The covered PPPs included infrastructure, regional development projects and real estate projects and were selected from official government documents and PPP advisory organizations. Respondents were identified based on the documents, the project websites and other information sources of the projects. In order to increase the possibility that a project is covered, for each project more than one person was selected with a maximum of 3 persons involved in one project. Of the 343 respondents or 93 PPP projects that received the questionnaire 10 respondents could not be reached (mail undeliverable) and 24 respondents indicated that they would not like to fill in the questionnaire or were not involved in the project. From the remaining 309 respondents 157 persons responded to the survey. 14 questionnaires were not filled in and thus deleted from the data set. The 143 respondents (response percentage of 46,3%) included in the analysis represent 68 PPP projects .

### **Data analysis**

For assessing the survey data in the light of the proposed structural model, we used Partial Least Squares - Structural Equation Modeling (PLS-SEM). PLS-SEM is a variance based method to explain the variance of endogenous non-observable variables (Hair Jr, Hult, Ringle, & Sarstedt, 2013). Basic PLS-SEM analysis allows identifying direct causal relationships, phantom relationships, mediated relationships, and moderated relationships. Authors from the specialized literature in the field of Industrial Management and Data Systems point out that SEM provides a powerful approach for estimating direct and indirect causal effects between strong concepts such as the abstraction of artifacts or man-made objects (design of formal and informal governance mechanisms), and non-observable behavioral variables (e.g. trust, cooperation, positive performance perception). First generation of multivariate analysis techniques are limited in assessing non-direct causal relationships between variables, as explanatory variables are assumed to have the same status (Hair Jr et al., 2013). Additionally, they are limited in incorporating auxiliary measurement theories or non-observable/latent variables measured indirectly by empirical indicators. As a second generation of multivariate analysis techniques, PLS-SEM overcomes these limitations and the need to impose restrictions on data, such as distribution assumptions required by other SEM techniques based on probability theory (Henseler, Hubona, & Ray, 2016).

### **Measurement model**

We model “Contractual Governance” and “Project Relational Norms” as composite constructs emerging from a specific configuration of different indicators. “Partner Trust”, “Partner Contribution” and “Project Performance” are modeled as Factor constructs reflected in the measured variance of their corresponding indicators. The underlying logic is that “Contract Governance” and “Project Relational Norms” are better conceived as “artifacts” or “intentional organizational designs” In contrast, “Partner Trust”, “Partner Contribution” and “Project

Performance” are considered as attitudinal/behavioral constructs based on true score theory (Henseler et al., 2016, p. 3).

**Contractual Governance (Exogenous - Composite Construct):** Principles for establishing defined legal obligations include the following Likert-Scale-Items: (CG1) “The contract is simple to understand”, (CG2) “Financial risk is shared between partners”, (CG3) “The contract has possibilities to impose sanctions in the case the contract is not abided”, (CG4) “The contract is characterized by flexible target values and norms than can reduced or enhanced under certain circumstances”, and (CG5) “The contract offers space for negotiation”.

**Project Relational Norms (Endogenous - Composite Construct):** It is a composite of collaborative activities including team-work, decision-making inclusiveness, open communication and conflict resolution. The following Likert-Scale-Items are used: (RN1) “There are organizational arrangements to facilitate interaction between parties”, (RN2) “(Private) implementers are consulted and involved in project management decisions”, (RN3) “Attention has been paid to the involvement of external stakeholders (citizens, environmental groups, other public actors) and their opinions”, (RN4) “In the decision-making process about the project different views are included and made visible”, (RN5) “Time is spent in communicating between parties (contract parties as well external parties)”, (RN6) “During information collection, emphasis was placed on establishing common starting points and common information needs between public and private parties in this project”, and (RN7) “When deadlock was reached or problems arose in the project the project, management tried to find common ground between the conflicting interests”. Items from (RN2) to (RN7) are based on early research conducted by (Klijn, Steijn, & Edelenbos, 2010).

**Partner Contribution (Endogenous – Factor Construct):** This construct is measured with the following Likert-Scale-Items: (PC1) “Activities of the involved parties are coordinated (aligned)”, (PC2) “The involved contract partners have contributed to the completion of the project in an accurate way”, (PC3) “The involved organizations in the network have adequate ways to successfully command mutual disagreements and conflicts”, and (PC4) “During the past years, parties have improved their collaboration”.

**Project Performance (Endogenous - Factor Construct):** This construct is measured with the following Likert-Scale-Items: (PP1) “The content results in this project receive adequate support from involved organizations”, (PP2) “The various spatial functions in this project are sufficient connected to each other”, (PP3) “The solutions that have been developed tackle the problems at hand”, (PP4) “The content of the proposals are durable solutions”, (PP5) “The cost of the project stay within the limits that have been set”, and (PP6) “The benefits of the projects – in general- exceeds the costs”.

**Partner Trust (Endogenous - Single Item):** A single Likert-Scale-Item is used to measure trust: (PT1) “There is trust between public and private parties”.

**Technological Complexity (Moderator - Single Item):** We use a single Likert-Scale-Item: (M\_TC) “The project was characterized by high technological complexity”.

**External conditions impact (Moderator - Single Item):** We use a single Likert-Scale-Item: (M\_EC) “The project is strongly affected by external conditions (for instance like safety regulations, nature requirements, etc.)”.

**Number of stakeholders (Moderator - Single Item):** We use a single Likert-Scale-Item: (M\_TC) “The project was characterized by a high number of external stakeholders”.

**Project stage (Moderator - Single Item):** We use an ordinal scale based on the following possible project stages (M\_PS): [1]The (master) plan for the project has been developed; [2]

Analysis of the feasibility and financial consequences of the plan has been completed; [3] A political elected body/organs has approved the master plan; [4] First physical structures have been carried out [5] Executive works have been ended; [5] Work performed has been transferred (e.g. Operational Management).

## RESULTS

### Overall fit of the model

We use updated guidelines for using PLS path modeling to assess the model globally (overall model) and locally (measurement models and structural model). We start with the overall goodness-of-fit, using bootstrapping to determine the likelihood of obtaining a discrepancy between the empirical and the model-implied correlation. We ran 4.999 bootstrap samples for allowing unanimous determination of empirical bootstrap confidence interval. This allowed the identification of both measurement model misspecification and structural model misspecification. We used three ways to test the model fit: maximum likelihood discrepancy, the geodesic discrepancy  $d_G$ , and unweighted least squares discrepancy  $d_{ULS}$ . Resulting value should be lower than the selected bootstrap quantile (HI95 or HI99). We found that our model meet model fit criterion for HI99 of SRMR and  $d_{ULS}$ , and for HI95 and HI99 for  $d_G$ . In this regard, the model cannot be rejected. We also determined the approximate model fit using standardized root mean square residual (SRMR). A value of 0 for SRMR would indicate a perfect fit and a value lower than 0.08 indicates an acceptable fit. Our model scored a SRMR of 0.079 for the saturated and estimated model, suggesting an acceptable fit.

**Table 1:** Goodness of model fit (estimated model results)

Criterion	Value	HI95	HI99
SRMR	0.079	0.079	0.084
$d_{ULS}$	1.074	1.071	1.203
$d_G$	0.416	0.527	0.586

### Measurement model

Factor constructs were assessed in terms of internal consistency and reliability (for assessing random error) and convergent validity and discriminant validity (for assessing systematic measurement error). While Cronbach’s alpha and Joreskog’s rho ( $P_C$ ) are common measures to assess internal consistency reliability for sum scores, they are less appropriate to assess construct scores used in PSL modeling. The most relevant internal consistency reliability measure is Dijkstra-Henseler’s rho ( $P_A$ ), which also should be higher than 0.7. All our factor constructs show an acceptable amount of random error according to Dijkstra-Henseler’s rho ( $P_A$ ). We excluded indicators that were below 0.4, when that increased construct reliability or validity<sup>5</sup>. For convergent validity, the usual measure is the Average Variance Extracted (AVE), which should be higher than 0.5 to be considered acceptable. Our two factor constructs meet this criterion. For discriminant validity, we tested Heterotrait-Monotrait ratio of correlations (HTMT) and Fornell-Lacker criterion. HTMT must be significantly smaller than 1 and, for establishing Fornell-Lacker criterion, AVE should be higher than its squared correlations with all other factor

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<sup>5</sup> Following this criterion, we deleted (PP1) “The content results in this project receive adequate support from involved organizations”

constructs. Both criteria were established for our factor constructs. We also reviewed cross-loadings to check if any item was incorrectly assigned to a wrong factor.

**Table 2:** Factor construct assessment and results

Factor construct	( $P_A$ )	AVE	Item	Loading	Item reliability
Partners Contribution	0.74	0.55	(PC1) Activities of the involved parties are coordinated (aligned)	0.65	0.43
			(PC2) The involved contract partners have contributed to the completion of the project in an accurate way	0.83	0.69
			(PC3) The involved organizations in the network have adequate ways to successfully command mutual disagreements and conflicts	0.78	0.61
			(PC4) During the past years, parties have improved their collaboration	0.69	0.48
Project Performance	0.82	0.55	(PP2) The various spatial functions in this project are sufficient connected to each other	0.62	0.38
			(PP3) The solutions that have been developed tackle the problems at hand	0.76	0.58
			(PP4) The content of the proposals are durable solutions	0.82	0.67
			(PP5) The cost of the project stay within the limits that have been set	0.82	0.67
			(PP6) The benefits of the projects –in general- exceeds the costs	0.67	0.45

There are fewer empirical criteria to assess the validity and reliability of composite factors. The most important criterion is the confirmatory composite analysis already tested by assessing the overall model-fit (SRMR of 0.079). Additionally, we checked two other criteria: collinearity and significance of the outer weights after implementing bootstrap procedure. For collinearity, we assessed the Variance Inflation Factor (VIF) of the items for our two composite factors to assess collinearity. We found that all indicators were below to 2.0, discarding collinearity issues. We also checked the empirical T-value of composite weights and outer loadings, keeping items which outer weight was significant or outer load is equal or higher than 0.5 (Hair Jr et al., 2013)<sup>6</sup>.

**Table 3:** Composite factor assessment and results

Composite construct	Indicator	Weight	Weights T-Values
Contractual Governance	(CG1) The contract is simple to understand	0.26	1.26
	(CG2) Financial risk is shared between public and private partners	0.55	2.91
	(CG3) The contract has possibilities to impose sanctions in the case the contract is not abided	0.57	3.05
	(CG5) The contract offers space for negotiation	0.38	2.17

<sup>6</sup> Following these criteria, we deleted (CG4) The contract is characterized by flexible target values and norms than can reduced or enhanced under certain circumstances, (RN3) Attention has been paid to the involvement of external stakeholders (citizens, environmental groups, other public actors) and their opinions, (RN5) Time is spent in communicating between parties (contract parties and external parties), (RN6) During information collection, emphasis was placed on establishing common starting points and common information needs between public and private parties in this project

Composite construct	Indicator	Weight	Weights T-Values
Project Relational Norms	(RN1) There are organizational arrangements to facilitate interaction between parties	0.27	2.26
	(RN2) (Private) implementers are consulted and involved in decisions of the project management	0.28	2.11
	(RN4) In the decision-making process about the project different views are made visible and included”	0.44	4.59
	(RN7) When deadlock was reached or problems arose in the project arose in the project, management tried to find common ground between the conflicting interests	0.43	3.16

**Structural model**

We assessed the structural model for the size and significance of path relationships being the core of the empirical endeavor. Figure 2 depicts the path relationships based on 4.999 bootstrap samples.

**Figure 2: Structural model results**



According to adjusted R<sup>2</sup> assessment of the endogenous variables, the percentage of variability explained by the precursor constructs of “Project Relational Norms” and “Partner Trust” is rather weak, but strong for “Partner Contribution” and “Project Performance”. Regarding paths, we found full mediation of “Project Relational Norms” between “Contractual Governance” and “Partner Trust”, “Partner Contribution”, and “Project Performance”. There is also full mediation of “Partner Contribution” between “Partner Trust” and “Project Performance”. Partial complementary mediation of “Partner Contribution” was found between “Project Relational Norms” and “Project Performance”. Table 1 summarizes total effects size f2

(including mediations) to quantify how substantial they are. Values above 0,35, 0,15 and 0,02 can be regarded as strong, moderate and weak, respectively (Henseler et al., 2016).

**Table 4:** Total effects inference

Effect	Original coefficient	p-value (2-sided)	Cohen f2	Size
Contractual Governance -> Project Relational Norms	0,406	0,0000	0,197	Moderated
Contractual Governance -> Partners Trust	0,346	0,0001	0,136	Week
Contractual Governance -> Project Performance	0,385	0,0000	0,174	Moderated
Contractual Governance -> Partners Contribution	0,380	0,0000	0,169	Moderated
Project Relational Norms -> Partners Trust	0,449	0,0000	0,252	Moderated
Project Relational Norms -> Project Performance	0,510	0,0000	0,351	Strong
Project Relational Norms -> Partners Contribution	0,565	0,0000	0,469	Strong
Partners Trust -> Project Performance	0,251	0,0155	0,067	Week
Partners Trust -> Partners Contribution	0,454	0,0000	0,260	Moderated
Partners Contribution -> Project Performance	0,478	0,0000	0,296	Moderated

### Moderation Analysis

Additionally, we explore eventual moderating effects of general PPP project characteristics including technological complexity, external conditions impact, number of stakeholders and project stage. Our approach is the two-stage continuous moderation analysis developed by Henseler and Chin (2010), which estimates the extent to which a selected moderator affects the strength the causal relationships considered in the structural model (Figure 2). We found few significant moderation effects. Initially, we found that “External conditions impact” positively moderates the causal relationship between “Contractual Governance” and “Project Relational Norms”. Meaning, for projects exposed to an average level of “External Conditions Impact”, the effect of “Contractual Governance” on “Project Relational Norms” scores 0,409 ( $p < 0.01$ ). But for those projects which external condition exposure ranks one standard deviation above the average exposure, the effect of “Contractual Governance” on “Project Relational Norms” increases up to 0,604. This is due the moderating effect, which represents an additional 0,195 ( $p < 0.01$ ).

Additionally, we found that “Project stage” negatively moderates the causal relationship between “Contractual Governance” and “Project Relational Norms”. For those projects that are ranked above one standard deviation from the average project stage, the effect of “Contractual Governance” on “Project Relational Norms” is 0.122 lower ( $p < 0.05$ ). Finally, “Number of stakeholders” negatively moderates the causal relationship between “Project Relational Norms” and “Partner Trust. For those projects that are ranked above one standard deviation from the average number of stakeholders, the effect of “Project Relational Norms” on “Partner Trust” is 0.149 lower ( $p < 0.10$ ).”

**Table 5:** PLS – Direct Effects Two-stage Continuous Moderation Analysis

Direct Effect	Initial Model	Technical Complexity		External Factors Impact		Project Stage		Number of Stakeholder	
	Path Coefficient	Path Coefficient	Moderator Effect	Path Coefficient	Moderator Effect	Path Coefficient	Moderator Effect	Path Coefficient	Moderator Effect
Contractual Governance -> Project Relational Norms	0,406***	0,403***	0,136	<b>0,409***</b>	<b>0,195***</b>	<b>0,414***</b>	<b>-0,122**</b>	0,389***	0,074
Contractual Governance -> Partners Trust	0,164	0,177*	0,093	0,171*	0,149	0,185*	-0,113	0,182*	0,141
Contractual Governance -> Project Performance	0,101	0,064	-0,035	0,048	-0,102	0,092	-0,052	0,106	-0,016
Contractual Governance -> Partners Contribution	0,076	0,050	-0,105	0,096	0,114	0,065	-0,005	0,092	0,154*
Project Relational Norms -> Partners Trust	0,449***	0,452***	-0,114	0,407***	-0,098	0,407***	-0,052	<b>0,403***</b>	<b>-0,149*</b>
Project Relational Norms -> Project Performance	0,224**	0,211**	0,170	0,222**	-0,063	0,254***	0,159	0,224**	0,104
Project Relational Norms -> Partners Contribution	0,361***	0,355***	0,055	0,344***	-0,063	0,387***	0,074	0,369***	0,012
Partners Trust -> Project Performance	0,033	0,080	0,068	0,086	0,198	0,029	0,018	0,078	0,204*
Partners Trust -> Partners Contribution	0,454***	0,476***	0,033	0,454***	0,064	0,462***	-0,014	0,469***	0,065
Partners Contribution -> Project Performance	0,478***	0,440***	-0,126	0,471***	-0,026	0,471***	-0,148	0,464***	-0,195

\* p < 0.10    \*\* p < 0.05    \*\*\* p < 0.01

## DISCUSSION

Our study reaffirms the complementarity between contractual and relational governance, discarding a substitutive relationship between contractual and relational governance mechanisms for PPPs. Furthermore, we also provide new insights that support the mediating role of relational governance for the relationship between contractual governance and project performance. What is in discussion is the underlying logic behind the mediating role of relational governance in the actual practice of using contracts to safeguard the partners' commitment in the process of value co-creation. According to our results contractual governance has an indirect effect on performance as formal contract design may facilitate conditions for establishing day-to-day relational norms that will encourage trust and mutual contribution, leading to higher project performance. It is the through contractual governance enabled relational governance that acts as mediator (Huber, Fischer, Dibbern, & Hirschheim, 2013). At the same time, the mediating role of relational governance stems from its compensating effect (Cao & Lumineau, 2015). Here, relational governance addresses the limitations of contractual governance by means of behavioral incentives that lead to collaboration and, finally, intended project performance.

Having considered alternative direct relationships between contractual governance and project performance, we found that the stronger path was the longer one: contractual governance -> relational norms -> trust -> partner contribution -> project performance. This provides initial empirical support for PPP governance as a cascade of enablers starting from intentional contractual design, which shapes relational norms oriented to encourage mutual reliable attitudes based on trust. The latter functions as a key driver for actual collaborative practices and activities that enable value co-creation. Nevertheless, explained variance of relational norms and trust in our model is weak, implying the existence of other factors in the real system that accounts for these two variables. Relational governance seems to operate as an autonomous factor that compensates contractual governance when encouraging partner contribution to project performance, mediating the long-term formal commitment in the contract and day-to-day collaborative interaction and activities.

### **Contractual governance as an enabler**

Elucidating the underlying logic of relational governance as a mediator requires better elaboration of the different dimensions of contracts as intentional designs. Contracts have a control dimension and a coordination dimension. "The control dimension forces partners to focus on roles and responsibilities, while the coordination dimensions create a common knowledge structure and facilitate the development of competence trust" (Cao & Lumineau, 2015, p. 19). From this perspective, significant coordinating dimensions of our contractual governance construct refer to financial risk sharing and room of negotiation between partners, while the control dimension is expressed by the possibilities to impose sanctions. Contractual governance as an enabler of relational governance might rely on the coordinating dimension to open the possibility to develop relational norms and collaborative behaviors.

The design of contractual provisions aimed at coordinating partners imposes a formal warrant for carrying out activities that actually allow partners to fulfill these obligations. Imposing financial risk sharing obligations and providing room for negotiation between partners requires adopting relational rules, such as finding common ground between conflicting interests when problems arises, and including different views during project decision making. In this scenario, contractual governance opens a degree of ambiguity of partner roles at the front-end

part of the project by compelling partners to share risk, and by making space for eventual negotiations. These legal obligations are intentionally designed to provide project flexibility for changing circumstances, which require consideration of individual responsibilities that cannot be defined in the original contract. Fulfilling the legal mandate of flexibility requires agreement on the procedures to reach shared vision over the substantive share risk issues and aspects to be eventually negotiated. In other words, partners are appealed to implement relational norms that actually make them able to fulfill their legal obligation of coordinating each other, such as finding common ground or including different views. Then, contractual provisions create conditions and incentives for engaging collaborative practices.

### **Relational governance as a compensator**

Solving deadlocks in a collaborative fashion and including different views for decision-making are managerial practices that are not only triggered when partners either face the materialization of financial risks, or have to consider new issues of negotiation. Enabling mechanisms cannot account for all the empirical variance of relational norms, even when they have a significant positive effect. Then, we have to consider relational governance as a compensator of contractual governance, addressing the limitations of the control dimension to actually encourage commitment in the fulfillment of roles and responsibilities. Relational norms operate at managerial level, when decision making does not necessarily require engaging additional negotiations between partners, neither to consider the long-term risk of the project. This inference is empirically supported by the fact that the strongest effect measured in our model is the overall effect of relational norms on partner contributions (including the mediating effect of partner trust between relational norms and partner contribution). Relational governance directly influences partners' behavior to engage collaborative activities in the process of delivering project outcomes. Then, relational norms compensate long-term contractual governance design by defining day-to-day collaborative micro-practices, the nature and dynamics of which are not required to be formalized as obligations to perform in advance.

### **Reinforcement between enabling and compensating**

According to our moderation analysis, external conditions are positive moderators between contractual governance and project relational norms. This finding is aligned with the interpretation of relational governance as a compensator of contractual governance as well as the interpretation of contractual governance as an enabler of relational governance. Depending on external conditions partners may experience a higher level of uncertainty about the extent to which initial contractual provisions hold in the future. Facing higher uncertainty activates joint risk management and negotiating upon changing circumstances, focusing the relational norms towards the discussion of substantive issues that might compromise the feasibility of original obligations between partners. Then, relational governance operates as a vehicle to compensate original contractual gaps given the necessarily incomplete nature of PPP contracts. On the other hand, the observed positive moderating effect of external conditions is also aligned with the theoretical proposition that higher levels of perceived external uncertainty requires crafting tighter collaboration structures at the front-end of the project (Rangan et al., 2006) (Kivleniece & Quelin, 2012). From this perspective, partners intentionally establish contractual structures *ex ante* that enable collaborative procedures to review project expectations and adapt partners' obligations *ex-post*s according changing conditions. Overall, there is a reinforcing relationship between enabling and compensating logics, which is consistent with recent theoretical endeavors

to offer an unified theory of project governance and PPP lifecycle governance (Henisz, Levitt, & Scott, 2012) (Levitt et al., 2014).

Nevertheless, our moderating analysis also provides evidence that the effect of contractual governance on relational norms is negatively moderated by the stage of the project. This empirical insight indicates the existence of factors that counteract the reinforcing effect between contractual governance and relational norms over time. On the one hand, certainty increases when the project approaches the end, reducing the importance of contracts as means to define specific obligations between partners in the future. Contracts has already fulfilled its role to regulate relationships and there are lower number of obligations to perform in the future. Correspondingly, at later stages of the project, partners have already adopted relational routines based on their actual relational experience rather than future expectations based on contractual provisions and the agreement on relational norms as intentional designs to shape collaboration.

### **The boundaries of project governance as intentional design**

Our empirical analysis indicates that the percentage of variability explained for the precursor constructs of “Project Relational Norms” and “Partner Trust” is rather weak, along the path “Contractual Governance”-> “Project Relational Norms” -> “Partner Trust”. This seems to suggest that relational governance aspects are only partially shaped by precedent intentional organizational design, highlighting the need of approaching governance design as an inter-temporal issue. Contracts and relational norms can be defined at the front-end of PPP projects, having the expectation that negotiated configuration of commercial, hierarchical and collaborative relations guarantee collective efforts for creating value, regardless of how the future unfolds at the implementation stage. In general, existing PPP governance approaches rely on designing organizational structures and decision-making procedures, with the potential to trigger specific behaviors to successfully deal with disruptive events that might jeopardize its mission. Nevertheless, what can be considered as an already established governance structure at the front-end of the project is always susceptible to change, given the actual praxis of agents involved in the typical long-lifecycle of PPP projects. In this regard, the possibility that agency might spontaneously (re)create structure, and that the activities of governing might (re)create the forms of governance is downplayed or ignored (Sanderson, 2012). The initial formal and intentional design, which partially explains relational norms, might be complemented by ongoing governing practices that shape the actual scope of relational norms along the project cycle. Additionally, formal mechanisms are created and recreated through informal practices overtime, allowing participants to deal with unforeseen events and contextual changes (Bygballe, Dewulf, & Levitt, 2015).

Furthermore, rather than considering relational governance as a unique construct, we made an analytical difference between the relational aspects that can be defined as rules or norms, and trust as undefined feelings and attitude of reciprocity. While in conjunction they provide an acceptable explanation of partner contribution variance, it was surprising that according to our empirical analysis partner trust variance was hardly accounted by relational norms. Our findings also indicates that project relational norms between parties seem to have an even lower impact on partners’ trust, when the number of external stakeholders is high. This finding calls for revisiting theoretical assumptions on the relationship between relational norms and partner trust. It is needed to review cross project aspects that might account for partner trust, such as pre-existing record of collaboration, long-term collaboration expectations and actual relational skills of the project participants. It appears that partner trust emerges through long-

term attitudes and behaviors at the network level, marginally affected by the intentional configuration of temporal relational norms between contracting parties at the project level.

### **Managerial implications**

Partners should consider relational norms as a key aspect to materialize long-term commitment to value co-creation and organizing day-to-day partners' contributions to a project. For example, establishing relational norms allows to seize potential collaborative relations defined in contracts, including risk share regimes and transparent re-negotiations. This is particularly relevant when facing external uncertainty: scenarios where partners are required to invest collaborative efforts to jointly manage disruptive events. Nevertheless, they have to be aware that relational governance appeals for social attitudes that cannot be directly intervened within the boundaries of the project, but indirectly and partially encouraged by project governance designs.

Formal contractual agreements have a higher influence on relational norms at the early stages of the project, enabling the possibility to encourage specific collaborative rules aligned with contractual provisions. As the project unfolds over time, the strength of the influence of contractual governance on relational norms decreases and interplay is more complex as informal practices re-create existing formal governance forms. Partners then shape the relational norms path by their problem-solving activities. Additionally, trust between partners is moderated by the extent to which project coalition is more or less open to social context. Therefore, partners should focus on the drivers of inter-organizational trust beyond the project coalition, and PPP policy makers should develop sectorial strategies based on the idea that trust is a common asset in the construction network.

### **Limitations**

Our data only includes PPPs in the Netherlands restricting the possibility to generalize the conclusions to countries with different institutional configuration. Finally, causal inferences were based on assumed causal directions from literature with the expectation of strong feedbacks over time. To overcome this limitation, it is required to implement longitudinal research designs based on the actuality of projects, as well as considering techniques, such as two-stage least squares (Henseler et al., 2016) or simulation methods such as System Dynamics (Sterman, 2000) to assess feedback loops over time and endogeneity.

### **CONCLUSION**

The inquiry on how to organize the interface between public and private agents for the delivery of public infrastructure has its grounds on the challenge to unravel the complex interplay between contractual and relational governance in the process of value co-creation. Our analysis built on previous research in Inter-organizational Relationships Governance, Relational Contracting and Public Private Partnerships, confirmed that contractual and relational governance are complementary rather than substitutive of each other. In particular, relational governance is a mediator of contractual governance and project performance, through the definition of relational norms and partners trust. According to our discussion, identified relational mediation operates as compensator of contractual governance, while contractual governance partially enables the operation of relational norms and the emergence of trust. This raises new research challenges such as defining the extent to which relational governance can

actually be intentionally designed, and how cross project governance factors have an impact on governance at project level.

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