The Effects of Contractual Governance and Relational Governance on Construction Project Performance: An Empirical Study

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Abstract

Because of the significant effects on exchange performance, more and more researches are focused on contractual governance and relational governance in the inter-organizational relationships. But few of those researches are fixed attention on construction project management. In this paper, we constructed a model to examine how the contractual governance and relational governance influence construction project performance and how the contractual and relational governance affect each other. According to the theories and existing literatures, the key variables of our model are measured with measurement standards. And with the data from construction projects in China, we find that contractual governance and relational governance have positive significant effects on construction project performance, and moreover, contractual governance and relational governance function as complements.

Keywords: Contractual Governance, Relational Governance, Project Performance Construction Project Management

1. Introduction

The nature of construction project is a temporary organization by a group of concluded market contracts. Therefore, there are hold-up, converse selection and moral hazard problems caused by the bounded rationality and opportunism [1][2][3]. For these governance problems in construction project, the solutions from principal-agent theory were put out, and the strictly designed contract based on the project characteristics can specify the powers and responsibilities, risk-sharing and rewards of the traders beforehand. So the contracts can suppress opportunism, save bounded rationality, and reduce the degree of information asymmetry to incentive the contractors to make the optimal relational-specific investment. But the view of TCE argues the contract should establish the order for expost, transfer the conflict and achieve the common interests of both sides [4]. Obviously, principal-agent theory stressing a contract is a incentive instrument and TCE stressing a contract is a suitability instrument. But in practice, when we draft a contract, we need consider the two functions. [5] The two functions (contractual incentive and contractual adaptability) are called contractual governance.

Relational governance is identified as the governance effects produced by the relational inter-organizational norms, such as, communication/intercommunion, information sharing, trust, and so on. Relational norms come from the social network which the exchanges embedded in. The social network includes social regulations and social processes. Construction project embeds itself in its social network, and is affected by social regulations and social processes. Construction governance must be influenced by related relational norms. Simultaneity any well-designed formal contract will undermine a part of opportunism and lead to contract defects [6], so relational governance is an important instrument to manage the part of opportunism in the exchange. Relational governance is a strong complement to contractual governance in construction project. And the existing relational governance also explains why in practice the informal and imprecise contracts in construction can be performed normally.

Now, an important question is that how the contractual governance and relational governance influence the construction project performance and how the contractual and relational governance affect each other. However, empirical evidence about the relationship between contractual and relational governance is mixed. Conceptual contributions with TCE thinking and incomplete contracting theory...
claim that legal regulations are important preconditions for trust, which is the key factor of relational governance. Empirical studies found that higher level of trust enhance higher levels of formalization and vertical integration. [7][8] That is, contractual governance and relational governance function as complements. Further, due to this complementarity, the combination of relational governance and formal contracts should generate higher exchange performance than either governance mechanism in isolation.

But other studies imply that contractual governance and relational governance function as substitutes. Scholars with this view explain that relational norms operate as a self-enforcing safeguard more effective and less costly alternative to contracts.[9] Indeed, some contend that contractual governance may even undermine a firm’s capacity to develop relational governance. The detailed contract may signal distrust of the exchange partners, undermine trust, and encourage, rather than discourage opportunistic behaviors.[10] These views suggest that in the presence of relational governance, contractual governance is at best an unnecessary expense and counter-product.

We may conclude that there is a “fundamental disagreement in the literature” on the relationship between relational and contractual governance. The two parties holding the opposite view seem to have reasons. So we need more empirical evidence for the natural relationship of contractual governance and relational governance and their effects on construction project performance. We will answer this question by addressing the following sub-questions: Are contractual and relational governance complements or substitutes, or both in construction management? And how does this affect relationship development and performance in a construction project? The data were collected from surveys of senior managers in construction.

2. Contractual governance and project performance

Formal contracts represent promises or obligations to perform particular actions in the future. [11] The more complex a contract is, the greater the specification of promises, obligations, and processes for dispute resolution is. For example, complex contracts may detail roles and responsibilities to be performed, specify procedures for monitoring and penalties for noncompliance and, most importantly determine outcomes or outputs to be delivered. So the function of formal contracts is called contractual governance. From TCE and Principle-agent theory, contractual governance can promote exchange performance. But we need to discuss the characteristics of construction projects first, because the exchange characteristics are the key in the governance logic of TCE.

Relational specificity investment of construction project exchange refer to the temporal specificity where timely performance is critical, and delay becomes a potentially effective strategy for exacting price concessions[12], the process specificity[13], as well as human resources specifically dedicated[14].

A formal contract is effective protection of relationship-specific investments [15], Relationship-specific investment is the main factor that leads to opportunism. The formal contract can draft the terms to ensure the interest of the party who invest the specific assets, inhibit the opportunist, and reduce the room of the costly bargaining. For example, if construction contracts do not set special safeguard clauses (such as contractors’ performance guarantee) to protect the temporary specificity of the owners and the safeguard clauses (such as the clause of progress payments) to protect the investment of contractors, the two of them are worried about opponents’ holding up in the re-negotiation and then reducing the investment in project construction, which will damage the project performance. In addition, a formal contract not only protects the already investment but also represents a promise for the future responsibilities [15]. This promise promotes new specific investments which in turn improve exchange performance.

Except the technical uncertainty, the uncertainty in the production process of the construction industry also includes task uncertainty caused by the fluctuations in market demand and the single-piece production, and the uncertainty caused by factors such as meteorology, geology, engineering. Most of the uncertainty is caused by information shortage. When a general industrial construction project is in the stage of the detailed design, the ratio of the unknown information of the project is often as high as 85%. Until the signing of a construction contract, there is still 15% of the information unknown [16]. With the development of a construction project, its uncertainty will change and the changes can not be predicted [17]. A formal contract can provide the arrangement of coordination and the program of re-negotiation in the future, facilitating the development of the project on a low transaction cost and get good exchange performance [18].

Formal contracts define a clear scope of the performance, reduce the room of opportunism, and save
bounded rationality. When the parties sign a clear formal contract, there is a clear area agreed by two of them. As the breach occurred, the parties know it easily and can decide whether to impose a private punishment. Even if the court has an effect on the execution of the contract, formal contracts can still save the bounded rationality of the parties and reduce the cost of private punishment. So the transaction cost is saved.

Taking together, the above discussions suggest that in order to respond to the exchange risks caused by the relationship-specific investment and uncertainty, save the bounded rationality, and reduce the room of opportunism, formal contracts must be designed. Establishment of formal contracts needs a certain cost, but these costs will be compensated from increasing project performance. So, we hypothesize the following (see Figure 1):

H1: Increases in contractual governance will increase construction project performance.

3. Relational governance and project performance

Macneil’s contract thought emphasizes contractual governance and relational governance co-exist in the exchange governance.[11] Contractual governance emphasizes designing the terms of formal contracts and performing the contracts strictly. Relational governance focuses on developing the relational norms which will motivate the parties to continue cooperation and investment.[7] These relational norms include flexibility, solidarity, information-sharing, and so on.

In a construction practice, flexibility enhances the adaptability of projects to future changes. Solidarity helps project organizations to establish bilateral relations through mutual adjustment and take concerted actions. Information-sharing can make both sides willing to share their private plans and objectives. Therefore, the problems and mutual adjustments can be solved easily in time. With the establishment of these norms, the parties will concerted about the long-term interests, thereby, the bounded rationality can be saved, the opportunism can be inhibited, and transaction cost can be reduced effectively.

Relational governance can not be like the contractual governance to reduce project uncertainty through the detailed provisions of the future contingents. But it can deal with the conflicts caused by project uncertainty cheaply. In the process of project construction, the dispute of the owners and contactors is the root cause of conflicts. And the environment uncertainty exacerbates the degree of these conflicts. Thus a confrontation industry environment is created. [19] These conflicts happen in organizational arrangement, information communication, interpersonal, shortages of materials and manpower, and so on. Through establishing common goals between the partners, improving communication, and solving the conflicts friendly, we can speed up the process of conflicts resolution and reduce transaction cost. More researches proved that cooperation among the parties increases project performance. [19][20][21][22]

Construction project partnership model has the characteristics of relational governance. Under this project management model, a project team is set up by signing a partnership agreement in which the common project objectives are established in account for the interests of all parties. And under a good communication mechanism, the risk of projects can be assigned reasonably and conflicts can be settled down friendly. Larson investigated a few of partnership model construction projects in North America and dug out that it is better than other project management models to achieve these projects’ progress goals, cost goals and technical goals, as well as the satisfaction of the key stakeholders of the projects. [23] In the similar surveys in Europe, the partnership model did well on the success rate of construction projects and the satisfaction of the parties significantly.

So, we hypothesize the following (see Figure 1):

H2: Increases in relational governance will increase construction project performance.

4. The relationship between contractual and relational governance

Construction projects is embedded in the social network where it is located, and the project contractual governance is bound by the relational norms from the social network. That is, contractual governance of a construction project must be influenced by relational governance. There are two diametrically opposite views of the relationship between contractual governance and relational governance in the literatures. One is that they function as substitution. The other is that they function as
complements. Scholars with this view explain that relational norms operate as a self-enforcing safeguard that is a more effective and less costly alternative to contracts. Indeed, some contend that contractual governance may even undermine a firm’s capacity to develop relational governance. A detailed contract may signal distrust of the exchange partner, undermine trust, and encourage, rather than discourage, opportunistic behaviors.

In light of this predicted substitution, the net effects of formal contracts and relational governance on exchange performance are ambiguous. While relational governance and formal contracts may have positive direct effects on exchange performance, because they function as replacements for one another (or in the case of formal contracts causally damage the other), the net effect on exchange performance is, at a minimum, reduced and potentially negative. Evidence of a substitution effect on performance exists if both relational governance and contract complexity positively influence performance, but negatively influence one another.

From the above arguments, we hypothesize (see Figure 1):

H3a: Increases in contractual governance discourage the formation of relational governance.
H3b: Increases in relational governance discourage the use of complex contracts.
H3c: Contractual complexity and relational governance will function as substitutes in explaining construction project performance.

Despite compelling arguments for viewing relational governance and contractual governance as substitutes, the logic for viewing them as complements appears equally compelling. In settings where hazards are severe, the combination of formal and informal safeguards may deliver greater exchange performance than either governance choice in isolation.

Eric and Jessica proved that the contractual dimension (including dominant contract and invisible contract) and the relational dimension (including reputation and trust) function as complements to achieve governance equilibrium in the process of project construction [24].

The dynamic development of contractual governance and relational governance also reflects the complementary role of their relationship with the process of the exchange ongoing. Poppp et al. argue that in the forepart of the exchange trust between the parties is weak and need the protection of a formal contract [7]. Simultaneously, if the parties can interact early to increase trust between them, this will smooth contract negotiations. Zheng, Roehrich and Lewis investigate the development processes of contractual governance and relational governance in two large PPP projects and suggest that in early time of construction project contractual governance is the mainly governance instrument [25]. But they also emphasize if the parties could establish trust between them through interactions early, the trust still reduce the difficulties of the negotiations and complex contract drafting. In the period of project building and operating, the relational norms, such as information-sharing, would help to solve the problems which are not defined in formal contracts.

In sum, the argument for complementarity suggests positive reciprocal relationships between relational governance and contractual governance in construction exchanges (see Figure 1). Contractual governance promotes relational governance in exchange settings and relational governance enables the refinement of contracts and promotes stability in construction exchanges. Further, due to this complementarity, the combination of relational governance and formal contracts should generate higher construction project performance than either governance mechanism in isolation.

Thus, we hypothesize:

H4a: Increases in contractual complexity will increase the level of relational governance.
H4b: Increases in relational governance will enhance contractual complexity.
H4c: Contractual complexity and relational governance will function as complements in explaining construction project performance.

The empirical model proposed in this paper is shown in Figure 1.
5. Data and methods

5.1. Data collection

This investigation is based on construction projects. The investigation unit is an exchange relationship in construction projects, such as, the exchange between the owner and the contractor, the exchange between the owner and the designer, and so on. In order to ensure the quality of the survey data, the questionnaires are only sent to senior project managers taking part in a whole project at least. The respondents of the questionnaires come from the main project participants, such as, the owner unit, the contractor unit, the designer unit, which can ensure the sample covering the main kinds of exchanges in construction and available data.

This study chooses Guangdong province of China as the area surveyed and asks the respondents to answer the questionnaires based on the projects which start or finish among 2000-2010. The reason for the choice is that the growth rate of the construction industry in Guangdong province appears in a big wave in the period of 2000-2010. In terms of China Statistical Yearbook, 2000-2002, the growth rate of construction industry in Guangdong province is stable at 20%; 2003-2007, decreased to 11-18%; 2008, decreased to 9.2%; 2009, increased to 16.6% and 2010, fell to 4.5%, again. The big wave of the growth rate makes a very high level of uncertainty in construction exchange. This opportunity makes our samples in a high uncertain period. This is very important to achieve significant results.

The questionnaires are sent to the respondents by e-mail, postal, and company website platforms. In order to ensure the reliability and validity of the data, the samples were screened in accordance with the following criteria: (1) the respondents must work in the construction industry not less than 3 years; (2) the respondents must be project managers; (3) missing terms of a questionnaire is no more than three. In this study, a total of 510 questionnaires were sent, the final available samples size is 261 copies.

5.2. Measure

5.2.1. Contractual governance

In this study, contractual governance is defined to include contract incentive and contract adaptability. Contract incentive is defined as the degree of contract completeness. Saussier proposes that contract completeness can be measured through examining whether the 6 terms are defined in detail [26]. Here we select 4 of them which are closely related to the construction exchanges. They are: (1) the term of contract price; (2) the liquidated damages of owner; (3) the term of conflict resolution. Poppo et al. [7] showed that “when a dispute occurs, you can always find the corresponding terms in the contract to deal with” can measure the complexity of a formal contract in their empirical research. We also include this term (tagged (5)) in our questionnaire. Masten proposed the contingent claims in long-term contracts are particularly important for contract adaptability [27]. Therefore, the questionnaire should include: (6) the contract is drawn up according to the characteristics of the project; (7) the contracts provide specific responses for unforeseen events; (8) the contracts specify the delivery standards; (9) the contracts specify the terms of the progress rewards and punishments. Crocker and Masten also proved that whether there is a term of contract price floating is important for contract adaptability in their works [27]. So this term (tagged (10)) is also added to our questionnaire.
Finally, the measuring of contractual governance (CG) includes 10 terms (Cronbach alpha=0.83). By factor analysis, contractual governance in construction can be attributed to two main factors: one is the contract incentive factor (CG-CI), the other is contract adaptability factor (CG-CA).

5.2.2. Relational governance

In this study, relational governance is defined as the governance function of relational norms in interorganizational exchanges. The relational norms are closely related to relational governance, therefore, in a few researches scholars often select the norms associated with a particular exchange as the measuring instruments of relational governance. But in more researches scholars emphasize that the measuring of relational governance should focus on the function of the norms [20][28][7][29][30]. And they adopt joint planning and joint problem-solving to measure the function of the relational norms. The two measuring instruments show higher reliability and validity in the literatures. So we chose them in our survey.

Joint planning requires the project participants program the project under a win-win attitude. And they should establish a common target system including progress targets, cost targets, quality targets in response to the project risks. Joint planning is the premise of joint problem-solving, the last one smooth the project to go on. So we measure relational governance(RG) using 7 items: (1) the project plans are set down according to the surroundings of the project; (2) the participants are willing to accept the all plans of the project; (3) the participants check the plans and adjust them according to the surroundings of the project; (4) the project plans fully consider the interests of the other side; (5) the both sides regard each other as partners; (6) the both sides make the main part of the decisions in project; (7) the both sides of project are willing to use their own resources to solve the project problems (Cronbach alpha=0.85). By factor analysis, relational governance in construction can be attributed to two main factors: one is the Joint planning factor (RG-JP), the other is joint problem-solving factor (RG-JPS).

5.2.3. The performance of a construction project

The construction project performance is a comprehensive evaluation of the project governance process and the results of the project governance. That is, the measuring of the construction project performance should include the governance effect and the governance efficiency. The project goals achieved or not shows the governance effect. And the project stakeholders satisfactory or not shows the governance efficiency. In literatures, scholars seem to attach importance to measure the stakeholder’s satisfactions. The underlying logic of our composite measure is that satisfaction is a focal consequence of a working partnership.

Ho., et al. used the opinions of the project alliance parties on the performances of the alliance dealing with the big events to measure the governance performances [19]. They impact that the governance performances are of four kinds: they are satisfactory; they are willing to cooperate in future; the cooperation is difficult to continue; the alliance dissolve. Therefore, the project performance(PP) is measured by following items: (1) the owner is very satisfactory to the results of a project; (2) the owner is very satisfactory to project design, function and quality; (3) the owner is very satisfactory to the cost of the project; (4) the owner is very satisfactory to project progress; (5) the owner is very satisfactory to the project quality up to scratch the specification standards in construction (Cronbach alpha=0.82).

The items in the questionnaire are designed as positive problems. And the respondents can use a 5-point scale to estimate every item, in which “1” represented “approve of the item very much” and “5” represented “disapprove of the item very much”.

This study selects the SPSS17.0 to exam the reliability and validity of the questionnaire. The reliability analysis describes the above. The validity analysis results are shown in Table 1. The relationships of all measurement variables are significant and ensure the questionnaire high validity.

| Table 1. Correlativity analysis of the key variables |
|---|---|---|---|---|---|
|   | RG-JP | RG-JPS | CG-CI | CG-CA | PP |
| RG-JP | - | 1 | | | |
| RG-JPS | .655*** | - | 1 | | |
| CG-CI | .110** | .037* | - | 1 | |
6. Results

6.1. The effect of complements on exchange performance

The coefficient between the contractual incentive and the construction project performance is positive and remarkable (shown in Table 2, Model1). That is, considering the opportunism in the course of a project, the contract completeness promotes the project performance. The coefficient between contract adaptability and the project performance is also positive and remarkable, but is smaller (shown in Table2, Model1). So this proves that increasing contractual governance will improve project performance (H1 has been verified).

The coefficient between joint planning and project performance is positive and remarkable (see Model2). The coefficient between joint problem-solving and project performance is positive and remarkable (see Model2). It suggests that establishing a common objective system of a project promotes project performance. And if the project parties can establish an atmosphere of cooperation in project organization and solve the main problems and difficulties, the project performance will be increased. So empirical data verify H2. Wherever Times New Roman is specified, Times Roman, or Times may be used. If neither is available on your word processor, please use the font closest in appearance to Times New Roman that you have access to. Please avoid using bit-mapped fonts if possible. True-Type 1 fonts are preferred.

Table 2. Regression analysis of the models

<table>
<thead>
<tr>
<th></th>
<th>RG (Model1)</th>
<th>CG (Model2)</th>
<th>PP (Model3)</th>
<th>PP (Model4)</th>
<th>PP (Model5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RG-JP</td>
<td>RG-JPS</td>
<td>CG-CI</td>
<td>CG-CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RG</td>
<td>0.11*</td>
<td>0.124*</td>
<td>0.531***</td>
<td>0.431***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.250)</td>
<td>(1.408)</td>
<td>(5.949)</td>
<td>(4.939)</td>
<td></td>
</tr>
<tr>
<td>RG</td>
<td>0.037*</td>
<td>0.227*</td>
<td>0.105*</td>
<td>0.082*</td>
<td></td>
</tr>
<tr>
<td>RG-JPS</td>
<td>(0.422)</td>
<td>(2.636)</td>
<td>(1.578)</td>
<td>(1.220)</td>
<td></td>
</tr>
<tr>
<td>RG-JP</td>
<td>3.541*</td>
<td>3.572*</td>
<td>1.984*</td>
<td>6.949*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.250)</td>
<td>(1.408)</td>
<td>(5.949)</td>
<td>(4.939)</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.027</td>
<td>0.027</td>
<td>0.015</td>
<td>0.051</td>
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<td></td>
<td>0.008</td>
<td>0.044</td>
<td>0.225</td>
<td>0.325</td>
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<td></td>
<td>0.195</td>
<td>0.314</td>
<td>0.323</td>
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</table>

Note: the standard β listed in the line from the variable value, t value listed in parentheses.
+p<0.1, *p<0.05, **p<0.01, ***p<0.001

6.2. The complementary relationship between contractual complexity and relational governance

The critical test of the relationship, as complements or substitutes, between contractual governance and relational governance, hinges on the sign and significance of coefficients for contractual governance and relational governance in the first two Models. Negative coefficients in Model1 and Model2 for contractual governance and relational governance would support a substitute relationship. And positive coefficients suggest a complementary relationship. In Table 2, the coefficients for contractual governance (making up of contract incentive and contract adaptability) and relational governance (making up of joint planning and joint problem-solving) is positive and significant (p<0.05). It suggests that increases in the levels of contractual governance are associated with greater levels of relation governance (Reject the H3a and H3b, Accepted H4a and H4b). Furthermore, the both governance mechanisms have positive effects (see Model5). So H3c is rejected, and H4c is accepted. These results are robust across all model specifications and suggest managers may complement their use of one
governance tool with the other.

7. Conclusion and discussion

The complementary function suggests that the two governance tools will work together to improve the project performance. The uncertainty in the construction industry is higher than in others. Thus, the defects of formal contracts are more obvious (such as, the contract rigidity brings an increase in number of conflicts). The results suggest that the project managers should be fully aware of the quality of their relationship to be as important as formal contractual governance.

Secondly, the two sides of a project need to recognize the dynamic complementary process of contractual governance and relational governance. Contractual governance laid the legal protection for the early cooperation of the participants in a project. And relational governance facilities the negotiations about the sensitive issues in the contracts, such as, project price and project risk sharing. Finally, modifying the original contract according to the surroundings of a project also reduces the number of the conflicts and disputes of the project. Using the dynamic complementary function of contractual governance and relational governance will promote the project performance.

This study gets several interesting results and has some limits. First, the data collection is only limited to a specific region, less senior leadership survey participators, inadequate samples. Secondly, the paper does not from the industry, firm size, ownership and other variables to control. And determining the impact of the above variables is needed. Therefore, further research should be developed to respond to these limits.

References

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