Mediating Role of Risk Perception of Trust and Contract Enforcement in the Construction Industry

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Abstract: Contract violations have become common problems in construction projects, yet little of the construction contract literature addresses the questions of responses to contract violations (i.e., contract enforcement). This research investigates the effects of trust on contract enforcement in a principal–agent relationship, and it explores the mediating role of risk perception in the effects. The authors distributed 429 electronic questionnaires and received 280 responses. After deleting responses completed in under 100 seconds and non-manager responses, we narrowed the total to 253 valid responses from professionals in the Chinese construction industry. Hierarchical regression analyses were conducted to test the hypotheses in this study, and the findings revealed that goodwill-based trust diminishes the severity of contract enforcement, while perceived relational risk and perceived performance risk increase the severity of contract enforcement. Mediation analyses also support the mediating role of perceived relational risk in the effect of goodwill-based trust on contract enforcement. The findings contribute to contract theory by providing a thorough understanding of contract enforcement and developing a conceptual framework consisting of trust, perceived risk, and contract enforcement. Managers from violating parties may benefit from this article through understanding the role of trust and perceived risk in dealing with a contract violation and following the strategies recommended for diminishing the severity of contract enforcement.

Keywords: Contract violation; Contract enforcement; Goodwill-based trust; Competence-based trust; Perceived relational risk; Perceived performance risk

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Introduction

Contracts are of great importance in conducting a project and maintaining relationships between parties (Cao and Lumineau 2015; Lu et al. 2015; Zwikael and Smyrk 2014). However, contract violations have become common in construction projects, which, compared with those in other industries, are characterized by higher uncertainty and complexity, no matter how well the contracts are designed (Chen et al. 2018). Furthermore, inappropriate responses to contract violations have been significant impediments to relationships between parties. For example, contract violations are sometimes caused by external unforeseeable contingencies or the violating party's oversight, in which case the violating party should not be blamed fully. Once the violated party applies severe contract enforcement, the two parties can fall into a vicious circle of conflicts and even litigation, which would thus undermine the relationship quality and do harm to the implementation of projects. Therefore, addressing the questions of responses to contract violations has significant practical implications for the construction industry.

Many construction industry associations provide standardized contracts for construction companies (Bubshait and Almohawis 1994), such as the Fédération Internationale Des Ingénieurs-Conseils (FIDIC), and many companies use their own standardized contracts, reducing the time and effort required for contract design and preparing contract documents (Bubshait and Almohawis 1994). Consequently, the crux of contractual governance is how to apply the contract during the relationship. However, a major portion of existing research has previously demonstrated the critical role of appropriate contract design, while ignoring how contract elements are applied (Bell et al. 2006; Faems et al. 2008; Hsieh et al. 2010), especially contract enforcement, an important part of contract application.

Great importance should be assigned to the connection between trust and contract enforcement. First, there has been no consensus on whether contract and trust substitute or complement each other in the construction industry. The above riddle could be solved if we identified the relationship between trust and contract enforcement. What is more, the higher the level of trust in the violating party, the fewer the resources needed to monitor the other party or enforce the contract (Connelly et al. 2015; Jobin 2008). Third, because of more complex and uncertain sources of contract violations in the construction industry, construction companies have more difficulty separating low effort from bad luck, thus relying more on trust to judge the agent's intention to violate the contract and to decide the severity of contract enforcement. Thus, trust in the violating party may be one of the most important factors when the

violated party decides whether to enforce the contract severely.

Furthermore, we also attempted to determine the mediating mechanism between trust and contract enforcement. As Teimoury et al. (2010) revealed, the management of risk should be properly understood to explore governance thoroughly. Thus, we argue that contract enforcement, as a part of governance, is closely associated with perceived risk. Contract enforcement has two roles: making up for the loss of a violation and discouraging the other party from violating the contract in the future (Antia et al. 2006). In terms of the former, because lenient contract enforcement involves uncertain future profits from the undamaged relationship between two parties at the expense of getting compensation for the present violation through contract enforcement, it could be axiomatically regarded as a kind of risk taking. As for the latter, given the warning effects and immediate benefits of severe contract enforcement, it can be considered a risk mitigation strategy. Besides, exploring the relationship between trust and perceived risk is in accordance with psychological accounts of how trust provides relief from risky situations (Gulati and Gargiulo 1999; Nicolaou and McKnight 2006). Based on the above-mentioned close relations among trust, perceived risk, and contract enforcement, we realize that perceived risk may be a substantively crucial explanation mechanism between trust and contract enforcement (Das and Teng 2004; Nicolaou and McKnight 2006; Zhang and Li 2015).

More specifically, this article considers the process from the occurrence of a contract violation to the application of contract enforcement as a process of decisions with risks, and it seeks to examine the relationship between trust and contract enforcement from a risk perception perspective, which, to the best of our knowledge, no prior study has done. To achieve the objective, the following research questions are explored:

RQ1: Does trust have a significant effect on contract enforcement?

RQ2: How does trust impact contract enforcement?

The remainder of this article is organized as follows. In the next section, we elaborate on the theoretical background of contract enforcement, trust, and risk perception. Hypothesis Development Section presents hypotheses involving the core variables. Research Methodology Section and Analysis and Results Section present the research methodology and analyses of the empirical results, respectively, and the final section presents discussions, implications, limitations, and future research directions.

Theoretical Background

Contract Enforcement

According to the fundamental assumption of transaction cost economics, people are motivated by self-interest (Williamson 1985). One party may pursue profits at the expense of the other's interests, which increases the need for contracts to safeguard the transaction (Cavusgil et al. 2004). Thus, hitherto, much of the empirical work in terms of the study of contracts has been devoted to understanding how contracts should be designed to reduce opportunism (Lu et al. 2016; Shi et al. 2018; Yang et al. 2011; Zhang et al. 2016a). However, whether contract governance achieves the desired effect also relies heavily on enforcement practices (Antia and Frazier 2001).

With the definition of Antia and Frazier (2001) and the construction context, contract enforcement in this article refers to the severity of a principal's (i.e., the party offering the contract) disciplinary response to an agent's (i.e., the party accepting the contract) violation of a contractual obligation. Many studies of contract enforcement have focused on the use of certain types of sanctions (e.g., termination of contracts) but have ignored the varying degrees of contract enforcement. This article draws on the notion of Antia and Frazier (2001) and treats contract enforcement as a continuous variable.

Economic theories always assume that a contract is executed mechanically once it is signed (Crocker and Masten 1991). However, in many cases, contract enforcement, based on the terms of the contract, can be applied to the other party's contract violation, but the violated party may not impose such severe contract enforcement, especially in China (Chen et al. 2018). There are two reasons for this seemingly "irrational" phenomenon. From an economic perspective, it would require considerable costs and time to take legal proceedings and to even terminate the contract (Antia et al. 2006; Koeppl et al. 2014), especially in the context of emerging economics, where legal systems are imperfect and cannot provide assurances for contract enforcement (Duan 2012). From a sociological perspective, overly severe contract enforcement may undermine the reciprocal basis of the relationship between the two parties (Huo et al. 2015; Koeppl et al. 2014), which could also invite retaliation from the violating party (Antia and Frazier 2001) and even potentially result in project failure.

Despite the determining effects of contract governance, contract enforcement has attracted limited academic attention. Through reviewing existing studies on contract enforcement, we find three current research directions: first, antecedents of contract enforcement, such as contractual components (Faems et al. 2008; Mooi and Gilliland 2013), network factors (Antia and Frazier 2001), transactional attributes

(Antia and Frazier 2001; Mooi and Gilliland 2013), and culture (Choi 1994); second, outcomes of contract enforcement, such as satisfaction with problem resolution (Mooi and Gilliland 2013), relationship performance (Osmonbekov et al. 2016), organizational performance (Qian et al. 2016), and cooperation (Quanji et al. 2016); and third, alternatives to contract enforcement, such as reputation (Iacobucci 2014) and social network (Chandrasekhar et al. 2015). Previous studies on antecedents of contract enforcement, despite providing valuable insights, have revealed little about the relationship between trust and contract enforcement. While it remains essential to identify the relationship between trust and contract, a debate persists as to whether they substitute or complement each other (Cao and Lumineau 2015; Poppo and Zenger 2002; Wu et al. 2017). This article argues that contradictory results may arise from the absence of a distinction between contract design and contract enforcement, a part of contract governance. In this spirit, we seek to explore the connections between trust and contract enforcement in the construction industry.

Trust

The concept of trust has been widely studied in the fields of psychology, economics, and sociology in recent decades, and in the 1980s, management studies began to pay attention to trust (Romahn and Hartman 1999). The development of trust is based on the trustor's expectation of the characteristics of the trustee, regardless of the contextual circumstances (Manu et al. 2015). Hence, a considerable amount of research commonly categorizes trust according to the perceived trustworthiness of the trusted party. This article borrows a classification from Nooteboom (1996) due to its clear distinction and close relevance to different perceived risks. That is, goodwill-based trust refers to the principal's expectation that the agent intends to fulfill its role in the relationship, while competence-based trust indicates the principal's expectation that the agent has the ability to perform its duties (Das and Teng 2001b; Nooteboom 1996; Zhang et al. 2016b).

Despite this good classification, the issues of defining trust need to be resolved. Some researchers (Shou et al. 2011; Zhang et al. 2016b) followed Mayer et al. (1995) and defined trust as "the willingness of a party to be vulnerable to the actions of another party." Paradoxically, they classified trust based on a different subjective state of positive expectations of the trustee, which inevitably led to a mismatch between the definition and classification of trust. On the contrary, this article adopts the definition of trust suggested by Das and Teng (2001a) as a subjective state of positive expectations concerning the likelihood that another's actions or outcomes will be acceptable, which is also called

subjective trust or trusting belief (Wu and Tsang 2008). Another reason for adopting this definition is that it harmonizes with the process from a subjective state to perceived risks and then to behavioral decisions.

Trust should be differentiated from behavioral trust, which refers to behavior resulting in being vulnerable to the other party, also called the behavioral outcomes of trust (Das and Teng 2004). The relationship between trust and behavioral trust is unexplored in the early studies on trust (Wu and Tsang 2008). Since behavioral trust means vulnerability, it can be regarded as a kind of risk-taking behavior which is defined as a decision involving uncertainty about the outcomes (Das and Teng 2004). It is impossible to understand risk-taking behavior without reflection on risks. Therefore, risks may well be a potential mechanism to explain the relationship between trust and behavioral trust (Nicolaou and McKnight 2006).

Risk Perception

Risks are objective (Das and Teng 1996; Das and Teng 2001b), and we should decide whether to take or mitigate risks based entirely on probability and the consequences of the objective risks to make the best decisions. However, as transaction cost economics assumes, due to bounded rationality, people cannot foresee all risks in advance (Zhang and Qian 2017). Therefore, perceived risks and objective risks are sometimes different despite close relevance, and people's decisions are often based on the former (Das and Teng 1996; Kim and Reinschmidt Kenneth 2011; Rodríguez-Garzón et al. 2016). Accordingly, this paper arguably considers perceived risks, rather than objective risks, as possible mediating factors affecting the decision-making process.

According to Das and Teng (2001a), perceived risks are a subjective assessment of the probability of some underlying unfavorable outcomes. Das and Teng (1996) divided perceived risks into perceived relational risk and perceived performance risk. Perceived relational risk refers to the probabilities and consequences of not achieving satisfying cooperation (Delerue 2004; Liu et al. 2008), while perceived performance risk refers to the probabilities and consequences of not achieving project objectives successfully despite both parties cooperating fully (Zhang and Qian 2017). Perceived relational risk arises mainly from the other party's opportunism, the root of which lies in the conflict of interests and self-interest sought by economic actors. Perceived performance risk has nothing to do with the parties' attitudes, but it is rather caused by the complexity of the external environment or the other party's lack of ability (Das and Teng 2004).

171 Some scholars have examined the influence of risk perception on governance mechanisms. For
172 example, Hsieh et al. (2010) explored how relational conditions affect the governance mechanism
173 through perceived risks after international joint venture formations. Moreover, Teimoury et al. (2010)
174 studied the effects of mediated power on the use of intention-based trust and unilateral control
175 governance mechanisms through perceived risks. However, although Das and Teng (2004) reiterated
176 the need to explore the integrated connections among trust, perceived risks, and behavior (i.e., contract
177 enforcement in this article), it still requires significant research attention.
178 The review above reveals that the relationship among trust, perceived risks, and contract enforcement
179 has been little examined and explored. Worse still, those studies cited above were mainly conducted in
180 marketing and information technology contexts, with little being conducted in the construction and
181 project management contexts. However, compared with other industries, the unique characteristics of
182 construction projects actually pose an even bigger challenge for responding to contract violations. On
183 the one hand, construction projects characterized by a temporary relationship lead to parties engaging
184 in opportunistic behavior (Lau and Rowlinson 2009; Zhang and Qian 2017), which often leads to
185 contract violations. On the other, construction projects often are confronted with a more adversarial
186 environment (Wong et al. 2008), which is also one of the main causes of contract violations. Due to
187 more complex and uncertain causes of contract violations, construction companies have more difficulty
188 separating low effort from bad luck. As a summary, there is a clear research gap in understanding
189 decisions relating to contract enforcement in the construction industry.

190 # Hypothesis Development

191 ## Goodwill-based Trust and Perceived Relational Risk

192 Conflicts of interest between parties potentially gives rise to opportunistic behavior by one party, which
193 is the main source of relational risks (Das and Teng 2001a; Delerue 2004). Goodwill-based trust may
194 lead one party to believe that the trustee would take into account the trustor's interests and thus
195 alleviate the perceived contradiction between the interests of the two parties (Langfield-Smith 2008). In
196 addition, goodwill-based trust can enhance the mutual interaction and information exchange between
197 the two parties after a problem (Cheung Sai et al. 2013; Fryxell et al. 2002; Rotimi James Olabode et al.
198 2016). Accordingly, the degree of asymmetrical information will be reduced, and a lower likelihood of
199 the other party exploiting its interests would be perceived, as well as fewer relational risks (Delerue
200 2004; Zhang and Li 2015). From the attribution perspective, the higher the level of goodwill-based

trust in the violating party, the greater the likelihood that the violated party will attribute this violation to external and uncontrollable factors (Chen et al. 2018) and the lesser the likelihood that the harmony of the relationship will be threatened or disrupted.

H1: *Goodwill-based trust is negatively associated with perceived relational risk.*

Perceived Relational Risk and Contract Enforcement

A high level of perceived relational risk would result in a high level of perceived uncertainties about the violating party's contractual commitments, thus stimulating the two parties to develop a more weak-tied and transactional-based relationship (Teimoury et al. 2010). Therefore, there is a strong need for the violated party to rely on a more efficient formal governance (i.e., contract) to govern their relationship (Yang et al. 2011). Furthermore, a high level of perceived relational risk means a bad relationship between two parties. Thus, given the already bad relationship, the violated party would not hesitate to apply severe contract enforcement. In addition, when the perceived relational risk level is high, a weak deterrence with lenient contract enforcement not only fails to compensate for losses, but it also encourages the other party to "push its luck" (violating the contract in the future) (Das and Kumar 2011). What is more, willingness to communicate, caused by a low level of perceived relational risk, would drive both sides to focus on how to minimize losses arising from contract violation collaboratively rather than through severe contract enforcement, which is regarded as a zero-sum game (Krasa and Villamil 2000).

H2: *Perceived relational risk is positively associated with the severity of contract enforcement.*

Goodwill-based Trust and Contract Enforcement

We expect that goodwill-based trust, by reducing the level of perceived relational risk, can lower the severity of contract enforcement. The higher the level of goodwill-based trust in the violating party, the greater the confidence of the violated party in the violating party's willingness to carry out its responsibilities and commitments (Das and Teng 1998). Therefore, the violated party estimates there to be a lesser chance that the other party will breach contractual commitments and exploit the violated party for its gain in later project implementations (Zhang et al. 2016b), thereby possibly taking risks for benefits from maintaining good cooperation and reducing the severity of contract enforcement. Conversely, the violated party with a low level of goodwill-based trust would perceive more opportunism from the violating party (Sánchez et al. 2012). Accordingly, it would be best for the violated party to make up for the losses caused by the violation and mitigate potential risks of future

violations through severe contract enforcement without worrying about the already-strained bilateral relationship (Faems et al. 2008; Lui and Ngo 2004).

H3: *Goodwill-based trust is negatively associated with the severity of contract enforcement.*

H4: *Perceived relational risk mediates the inhibiting effect of goodwill-based trust on the severity of contract enforcement.*

Competence-based Trust and Perceived Performance Risk

Perceived performance risk may come from the volatility of the external environment or from concern about the other's competence (Das and Teng 2004), especially in the construction industry, where it is impossible for both parties to anticipate all situations (Zhang et al. 2016b). It seems axiomatic that one party with higher competence-based trust in the other party would have a lower level of perceived performance risk (Pinto et al. 2009). There are two explanations for this assertion. For one thing, despite the violation, the violated party will think the other party, with high professional competence, possesses rich resources to fulfill its obligations specified in the contract (Johnston et al. 2004). For another, the competent party would be assumed to be able to handle uncertain environments in the future, including the natural environment or the turbulent economic environment, thus ensuring good project performance (Dyer and Chu 2003).

H5: *Competence-based trust is negatively associated with perceived performance risk.*

Perceived Performance Risk and Contract Enforcement

A low level of perceived performance risk increases the possibility of one party deciding to continue the relationship, especially when a disturbance exists between the two parties (Malhotra and Lumineau 2011). If this current relationship is supposed to continue after the violation and further cooperation is expected in the future, the violated party may reduce the severity of contract enforcement to prevent agent retaliation (Antia and Frazier 2001). In addition, joint expectations of future business provide opportunities for reciprocity (Rooks et al. 2006) and thus joint problem solving rather than unilateral punishment. Conversely, a high level of perceived performance risk leads to the considerable potential for project failure. Under this circumstance, it is crucial for the violated party to protect its own interests constantly through severe contract enforcement and circumscribe the negative consequence of project failure (Das and Teng 2001a).

H6: *Perceived performance risk is positively associated with the severity of contract enforcement.*

Competence-based Trust and Contract Enforcement

The authors expect that competence-based trust, by decreasing the level of perceived performance risk, would diminish the severity of contract enforcement. Based on the strong competence-based trust in the violating party, the violated party perceives fewer performance risks from lack of competence and unforeseeable external barriers (Holtgrave et al. 2017). Everything else being equal, one would be more likely to be engaged in a less risky task than a riskier one (Hsee and Weber 1999). Therefore, the violated party would be more likely to take the risks, that is, to employ less severe contract enforcement, and even to ignore the violation. More importantly, a contract's ultimate aim is to achieve better project performance (Lu et al. 2015; Poppo and Zenger 2002). By comparison, a high level of perceived performance risk entails severe contract enforcement to issue a warning to encourage the violating party to make improvements and to perform better, which can mitigate concerns about poor project performance. That is, strong competence-based trust could be an alternative to severe contract enforcement in ensuring project performance.

H7: *Competence-based trust is negatively associated with the severity of contract enforcement.*

H8: *Perceived performance risk mediates the inhibiting effect of competence-based trust on the severity of contract enforcement.*

Based on the above hypotheses (H1–H8), we develop the conceptual framework of this study, as shown in Fig. 1.

Research Methodology

Sampling and Data Collection Procedures

This study used a questionnaire survey to test the proposed hypotheses. All data were collected from Chinese professionals who had experience in contract violations in the construction industry. Because this research focuses on the principal's responses to the agent's contract violation, the owners were asked to recall a contract violation by general contractors while the general contractors were asked to recall a contract violation by subcontractors. General contractors actually act both as agents in owner–general contractor relationships and principals in general contractor–subcontractor relationships in the context of this study. In case respondents all recalled highly serious contract violations, which generally resulted in relatively severe contract enforcement, they were asked to fill out the questionnaires based on their latest experience of a contract violation. The questionnaire covered basic information about respondents and projects, and items were designed to measure goodwill-based trust,

competence-based trust, perceived relational risk, perceived performance risk, contract enforcement, and control variables.

To confirm the face validity of these measurements, the authors conducted a pilot test through semi-structured and in-depth interviews with 21 managers specialized in contract enforcement, and each interview lasted about 30 minutes. After that, the authors distributed 429 electronic questionnaires and 280 informants from different companies responded to the questionnaire, with a response rate of 65.3%. The whole process of collecting questionnaires lasted about one month. After deleting responses completed in under 100 seconds and non-manager responses, we got 253 valid responses, representing a valid response rate of 60.0%. Considering that all of the respondents were compensated for their participation, this high response rate is understandable. **Table 1** shows the basic information of the respondents and the projects. It shows that 97.3% of the respondents have work experience of more than three years, indicating they can understand the subject of this study well enough. In addition, the project durations range from less than 3 years to more than 11 years, which manifests in the representativeness of the sample.

Construct Measures

We adopted pre-existing measurement scales and modified them according to the conceptual definitions of the constructs and the construction context. In addition, because all measurement scales on which this study is based are in English, it took deliberate effort to translate the scales into Chinese to ensure their applicability. Thus, we changed inappropriate or vague Chinese words according to the interviewees' suggestions in the pilot test. Core variables were measured using 7-point Likert-type scales (1 = strongly disagree and 7 = strongly agree).

Contract enforcement: There are many scales for measuring the severity of contract enforcement, but few for the construction industry. This research measured the severity of a principal's disciplinary response to an agent's violation of a contractual obligation, namely, the owner's response to the general contractor's contract violation and the general contractor's response to the subcontractor's contract violation in the construction industry. Derived from Antia and Frazier (2001), Antia et al. (2006), and Quanji et al. (2016), four items, as shown in **Table 2,** were used to measure the severity of contract enforcement.

Trust: This research measured the violated party's perceptions of the trustworthiness (goodwill and competence) of the violating party. We adopted the scale from Lui and Ngo (2004) and Zhang et al.

(2016b), and it is recognized as a mature scale by many researchers in the construction context. There are five items for goodwill-based trust and four items for competence-based trust, as shown in **Table 2**.

Risk perception: There are few scales for risk perception, let alone in the construction context. Thus, based on the conceptual definitions of two types of risk perception and in-depth interviews with experienced managers, we adopted and modified the scale from Zhang and Li (2015) and Zhang and Qian (2017). For the scale of perceived relational risk, we mainly made some modifications according to the conceptual definition. There are four items for perceived relational risk, as shown in **Table 2.** The first and fourth items, measuring perceived relational risk, are from Zhang and Li (2015) and Zhang and Qian (2017). Besides, according to Das and Teng, relational "risk arises because of the potential for opportunistic behavior…in shirking, cheating, distorting information, appropriating resources, and so on" (2001b, p. 253). Thus, we incorporated the third item into our questionnaire. In addition, relational risk "refers to the concern that firms may not work toward the mutual interests of the partners…given a chance, would tend to maximize their own interests at the cost of the other partners" (Das and Teng 1996, p. 831). Thus, we incorporated the second item into our questionnaire. We replaced Zhang and Li's (2015) item "How likely our party thinks that other members will take advantage of us when the opportunity arises" with this item because the two items overlap each other and, compared with Zhang and Li's (2015) item, this item better reflects the emphasis of the conceptual definition of perceived relational risk on interest conflicts. There are also four items for perceived performance risk, as shown in **Table 2.** Based on Zhang and Li (2015) and Zhang and Qian (2017), we made some modifications, mainly according to the interviewees' suggestions. For example, the interviewees mentioned that whether tasks stipulated in the contract were fulfilled, which was not included in the scale of Zhang and Li (2015) and Zhang and Qian (2017), is one of the most important parts of project performance. Thus, we incorporate the item "We think that our partner will be unable to fulfill the tasks stipulated in the contract, although we cooperate fully" into our scale. Besides, the interviewees also mentioned the item, "We think that the performance of this project is likely to decline in the foreseeable future" failed to separate performance declination arising from unsatisfactory cooperation, which was the source of perceived relational risk. Thus, we incorporated "although we cooperate fully" into all items measuring perceived performance risk (except the last one, "We think that we will meet with difficulties in the implementation of the project" which focuses on external situations not influenced by unsatisfactory cooperation).

Control variables: Combined with previous research on antecedents of contract enforcement, we considered the following control variables. (1) *Feasibility of legal enforcement*. Previous research has shown that the governance effect of formal contracts is ensured by an efficient legal enforcement system (Duan 2012). Hence, we measured this variable by a single item: "The legal enforcement system can provide assurances for contract enforcement (1 = strongly disagree and 7 = strongly agree)". (2) *Shadow of the future*. The greater the likelihood of future cooperation between the two parties, the more likely the violated party is to turn to trust for governing the transaction relationship rather than formal contract (Chen et al. 2018). This variable was measured by a single item: "After this violation, how likely is it for your firm and the violating party to cooperate again in the future?" (3) *Asset specificity*. Transaction-specific investments, a source of independence, have a significant effect on choices of governance mechanisms and contract enforcement (Antia and Frazier 2001; Wu et al. 2017). Four items were adapted and modified from Carson et al. (2006) and Liu et al. (2014): "a) If we had to switch to a different partner during the project, much of our investment in resources (like human, equipment, or materials) would have to be made again; b) If we had to switch to a competitive partner during the project, it would be difficult for us to recoup investments in resources (like human, equipment, or materials); c) If we had to switch to a different partner during the project, it would take some time for us to bring the new partner up to adapt to the construction schedule; d) We have spent a lot of time and effort learning to work effectively with the partner before our relationship was productive." The former two items measure the specific resources (like human, equipment, or materials) put into the project by principals, and the latter two items capture the time and efforts that principals have spent. This scale refers to four kinds of asset specificity mentioned by Williamson (1985), such as site specificity (not applicable, because no matter which agent the principal chooses, the project site is equally specific), physical asset specificity, human asset specificity, and dedicated assets. (4) *Cost of enforcement*. A high cost of enforcement could discourage the principal from enforcing the contract (Antia and Frazier 2001). (5) *Severity of this violation*. Because this article focuses on the response to a specific violation, the specific features of this violation could relate to the severity of this response. A single item was used to measure this variable: "This violation caused a great loss to us (1 = strongly disagree and 7 = strongly agree)." (6) *Contract completeness*. This may influence both trust (Cao and Lumineau 2015) and contract enforcement (Mooi and Gilliland 2013), and this variable was measured by a single item: "The contract is very clear and detailed in general (1 = strongly disagree and 7 =

strongly agree)."

Construct Reliability and Validity

Common method variance (CMV) is defined as a "systematic error variance shared among variables measured with and introduced as a function of the same method and/or source" (Richardson et al. 2009, p. 763). The cross-sectional design, which uses self-reported data, is vulnerable to inflated correlations issues caused by CMV. Harman's single factor method through an exploratory factor analysis (EFA), the aim of which is to check whether one general factor is accounting for the majority of covariance among the measures, is one of the most widely used to check CMV issues (Podsakoff 2003). Thus, we followed this method and used SPSS 22 to conduct an EFA. The result shows that the cumulative contribution rate of all factors is 74.152%, and the rates of the factors are 37.799%, 16.757%, 8.945%, 6.625%, and 4.026% respectively, which are all less than 40%. Thus, no single factor can explain most of the variation, indicating that CMV is not a significant problem in this study. Besides, we calculated the Cronbach's alpha values of multiple-item scales to test the internal consistency and reliability. As shown in **Table 2**, all of them exceed the 0.7 benchmark, indicating an acceptable level of consistency and reliability of the scales.

In addition, we conducted a confirmatory factor analysis (CFA) with structural equation modeling to evaluate the validity of the constructs. As shown in **Table 2**, the results show that $\chi^2/df = 2.046$ ($p<0.01$) < 3, the goodness of fit index (GFI) is 0.881 > 0.8, and the root mean square error of approximation (RMSEA) is 0.064 < 0.08, which indicate a satisfying overall fit. The comparative fit index (CFI) is 0.947 > 0.9, incremental fit index (IFI) = 0.947 > 0.9, Tucker–Lewis index (TLI) is 0.938 > 0.9, and normed fit index (NFI) is 0.902 > 0.9, which indicate a satisfying comparative fit. The adjusted goodness of fit index (AGFI) is 0.847 > 0.8, which indicates a satisfying model parsimony. Thus, the results indicate a satisfying structural model fit. More details and information about the meanings and benchmarks of these measures can be found in S. Davcik (2014) and Patel and Jha (2016). We also used the results of the CFA to calculate convergent validity and discriminant validity. Construct reliability (CR) and average variance extracted (AVE) were used to calculate them. The results of convergent validity are shown in **Table 2**. The CR values for constructs range from 0.851 to 0.925, all above the 0.7 benchmark, and the AVE values of the constructs range from 0.593 to 0.721, all above the 0.5 benchmark (Fornell and Larcker 1981), indicating a high convergent validity. To estimate the discriminant validity, we compared the square root of the AVE value of each construct,

which was shown in the diagonal row in **Table 3**, with all off-diagonal correlation coefficients between this construct and all other constructs in **Table 3**. As **Table 3** shows, the square root values of AVE are all higher than the corresponding coefficients, confirming the acceptable discriminant validity.

Analysis and Results

According to Baron and Kenny (1986) and Judd and Kenny (1981), to test the mediation, three steps should be taken. First, to regress the mediating variable (M) on the independent variable (X); second, to regress the dependent variable (Y) on X; and third, to regress Y on both X and M. Consequently, because there are two independent variables (X_1: *Goodwill-based Trust*; X_2: *Competence-based Trust*), two mediating variables (M_1: *Perceived Relational Risk*; M_2: *Perceived Performance Risk*), and one dependent variable (Y: *Contract Enforcement*), the following equations were built to test the hypotheses in this study:

$$M_1 = a_1X_1 + b_1 \quad (1)$$

$$M_2 = a_2X_2 + b_2 \quad (2)$$

$$Y = a_3X_1 + a_4X_2 + b_3 \quad (3)$$

$$Y = a_5X_1 + a_6X_2 + a_7M_1 + a_8M_2 + b_4 \quad (4)$$

Based on the above equations, we used SPSS 22 to conduct several hierarchical analyses to test hypotheses of this study. Models 1 and 2 aim to test equation (1) and whether perceived relational risk is influenced by goodwill-based trust. Models 3 and 4 aim to test equation (2) and whether perceived performance risk is influenced by competence-based trust. Models 5 and 6 aim to test equation (3) and whether contract enforcement is influenced by goodwill-based trust and competence-based trust. Model 7 aims to test equation (4) and whether goodwill-based trust and competence-based trust significantly affect contract enforcement after adding perceived relational risk and perceived performance risk into the regression equation.

Before analyzing the results in **Table 4**, we examined the variance inflation factor (VIF) values of the independent and control variables; all were below 10, indicating no serious multicollinearity problem. As shown in Model 2 in **Table 4**, perceived relational risk (PRR) is negatively influenced by goodwill-based trust (GT) with significance ($\beta = -0.306$, $p<0.001$), which supports H1. The results in Model 7 show that PRR is significantly positively related to the severity of contract enforcement ($\beta = 0.166$, $p<0.05$), which supports H2. In addition, as shown in Model 6, goodwill-based trust is significantly negatively associated with the severity of contract enforcement (CE) ($\beta = -0.151$, $p<0.05$);

thus, H3 is supported. According to Baron and Kenny (1986), one can confirm a variable's mediating role when the following conditions are met: the correlation coefficients between X and Y and between X and M are both significant. Meanwhile, when regressing Y on both X and M, the correlation coefficient between M and Y is significant and the correlation coefficient between X and Y decreases or becomes insignificant compared with the equation without the presence of M. Thus, combined with these significant effects, the full mediating role of perceived relational risk in the relationship between goodwill-based trust and contract enforcement is confirmed; thus, H4 is supported.

Meanwhile, the results in Model 4 reveal that perceived performance risk (PPR) is negatively influenced by competence-based trust (CT) with significance ($\beta = -0.144$, $p<0.01$), supporting H5. The results in Model 7 also show that perceived performance risk is positively related to the severity of contract enforcement with significance ($\beta = 0.226$, $p<0.001$), which supports H6. However, contradictory to H7, the relationship between competence-based trust and the severity of contract enforcement is not significant ($\beta = 0.020$, $p>0.05$). According to Baron and Kenny (1986), the mediating effect should also be rejected in the case of an unsupported main effect. We followed this principle and rejected H8, although the mediating role of perceived performance risk may exist if there is indeed the offsetting mediating effect of other variables.

To ascertain the mediating role of perceived relational risk, we test the following equations (1), (5), and (6) by conducting hierarchical regression analyses excluding competence-based trust and perceived performance risk. As shown in Models 1, 2, 5, 8, and 9 in **Table 4**, the results (GT→CE: $\beta = -0.141$, $p<0.05$; PRR → CE: $\beta = 0.293$, $p<0.001$), combined with the significant relationship between goodwill-based trust and perceived relational risk, support H4 again.

$$M_1 = a_1 X_1 + b_1 \quad (1)$$

$$Y = a_9 X_1 + b_5 \quad (5)$$

$$Y = a_{10} X_1 + a_{11} M_1 + b_6 \quad (6)$$

Given that the data in this study are all from Chinese construction companies, the results in this study may be specific to China that is embedded in *guanxi* culture (Chen et al. 2018), which is driven by morality and social norms, refers to networks of informal relationships and exchanges of favors (Lovett et al. 1999; Wang 2007). Lenient contract enforcement, or even ignoring a contract violation, can be considered by the violating party as a favor, which can protect the *guanxi* and which will be paid back once circumstances permit. Therefore, to address the potential issues of Chinese culture, we selected

project place (in China or in other countries: the project in China is more embedded into Chinese culture than in other countries) and *type of partner* (Chinese company or non-Chinese company: the relationship between two Chinese companies is more embedded into Chinese culture than between a Chinese company and a non-Chinese company) as two proxy variables for Chinese *guanxi* culture. Then, we conducted supplementary analyses to test whether these two variables affect contract enforcement directly and whether they influence the relationship between trust and contract enforcement (that is, whether they moderate the effect of trust on contract enforcement). Hierarchical regression analysis was conducted to test the direct and moderating effects of these two proxy variables for *guanxi* culture: first, to regress the dependent variable (Y) on the independent variables (X) and the moderating variable (G), as shown in equation (7), and second, to include the interaction term of X and G, as shown in equation (8).

$$Y = a_{12} + a_{13}X_1 + a_{14}X_2 + a_{15}G + b_7 \quad (7)$$

$$Y = a_{16} + a_{17}X_1 + a_{18}X_2 + a_{19}G + a_{20}G * X_1 + a_{21}G * X_2 + b_8 \quad (8)$$

The results are shown in **Table 5**. As shown in Model 11, there is no significant relationship between project place and contract enforcement (β = -0.128, $p>0.05$). The results in Model 12 show that the interaction terms of project place and goodwill-based trust (β = 0.136, $p>0.05$) and competence-based trust (β = -0.057, $p>0.05$) have no significant effect on contract enforcement. As shown in Model 13, there is no significant relationship between type of partner and contract enforcement (β = 0.025, $p>0.05$). The results in Model 12 also show that the interaction terms of project place and two types of trust do not have a significant effect on contract enforcement (β = -0.183, $p>0.05$; β = 0.096, $p>0.05$). The results together reveal that Chinese *guanxi* culture not only has no direct effect on contract enforcement, but it also does not play a significant role in the relationship between trust and contract enforcement, which implies the results in this study can be generalized to the global community.

Discussions and Conclusions

Discussion

Overall, the picture that emerges from the empirical results shows that a contract is not mechanically executed after a contract violation, but it is closely related to trust in the violating party and risk perception of the violated party. As suggested in H3, goodwill-based trust significantly diminishes the severity of contract enforcement, indicating that goodwill-based trust reduces the need for contract enforcement that might cause high ex-post transaction costs and conflicts between the two parties. This

finding supports Zhang et al. (2016b), whose analyses revealed that goodwill-based trust promotes two parties' behaving cooperatively after a dispute. This is possible, as suggested by Zhang and Li (2015), because goodwill-based trust leads to a lower level of perceived conflict of interest. Thus, the violated party believes the other party will take into account both parties' interests together as a whole and protect the common good after a violation. Instead of enforcing the contract severely, which often leads to zero-sum outcomes (Krasa and Villamil 2000), the losses of the overall project arising from this violation that should be concentrated on in this circumstance are minimized.

Meanwhile, this article examined the mediating role of perceived relational risk. Our findings show that goodwill-based trust reduces the level of perceived relational risk, therefore reducing the severity of contract enforcement. Combined with the significant effect of goodwill-based trust on the severity of contract enforcement, this article, in confirming H4, identifies the mediating role of perceived relational risk. Specifically, consistent with H1, our findings support previous studies (e.g. Cook et al. 2005; Das and Teng 1998; Liu et al. 2008) on the relationship between goodwill-based trust and perceived relational risk. As Das and Teng (2001b) demonstrated, goodwill-based trust means a good intention to cooperate, with the result that partners rarely worry about relational problems in the future. In addition, goodwill-based trust increases confidence that the other party is pursuing mutually compatible interests (Das and Teng 1998) and respecting reciprocity norms (Shou et al. 2011), thus diminishing the level of perceived relational risk. The results also reveal that a higher level of perceived relational risk escalates the severity of contract enforcement, in line with H2. According to transaction cost economics (TCE), economic actors seek self-interest with guile (Williamson 1985), which is a source of perceived relational risk (Liu et al. 2008). Contract, called "legal ordering", discourages self-seeking behavior, thereby narrowing the severity of this kind of risk (Delerue and Simon 2009; Luo 2006). Hence, severe contract enforcement as a risk reduction strategy can deter the violating party from contract violations through opportunistic behavior in the future. In addition, a low level of perceived relational risk prompts the violated party to tolerate the violation, which means pursuing uncertain future profits from a good relationship at the cost of current losses due to lenient contract enforcement.

Much of the research on trust only refers to trust concerning motivation, while ignoring trust regarding the trustee's competence. This article distinguishes competence-based trust from goodwill-based trust, and it examines the influence of competence-based trust on contract enforcement. A surprising finding

is that the effect is not verified, which implies that competence-based trust cannot serve as an alternative to contract enforcement. A possible reason for this insignificant relationship is that competence cannot be improved through severe contract enforcement. Thus, if the violating party is incapable of performing the contractual obligations, severe contract enforcement will not only have limited effectiveness (Lui and Ngo 2004), but it will also cause negative outcomes arising from harming the relationship and the agent's potential retaliation (Antia and Frazier 2001; Chen et al. 2018). This further adds weight to the importance of differentiating between the two types of trust, particularly when one wants to explore the relationship between trust and contract.

With regard to the mediating role of perceived performance risk, despite the possible offsetting mediating effect of other variables, this article, following the mediation test method of Baron and Kenny (1986), rejects H8. As hypothesized in H5, the results provide empirical supporting evidence in the study of Das and Teng (2001b), indicating that perceived performance risk is significantly shaped by competence-based trust. Abundant resources, which the competent party is more likely to possess, can enhance the likelihood of cooperating success and of coping with the adverse contingencies that are the main sources of perceived performance risk. We further find that perceived performance risk diminishes the severity of contract enforcement. As previous studies (e.g., Child and Rodrigues 2004; Teimoury et al. 2010) have revealed, to relieve concerns about performance risk and in turn reduce transaction cost and promote performance, a party would deliberately increase the use of unilateral-based control (e.g., contract). By contrast, according to Rooks et al. (2006), expectations of future success promote the tendency to solve the problem jointly.

Contributions and Implications

This study establishes a conceptually clear and straightforward framework by which to examine the effects of trust on contract enforcement from the perspective of risk perception. Using empirical data from 253 professionals in the Chinese construction industry, this study comes to the following conclusions. Goodwill-based trust mitigates the severity of contract enforcement by diminishing the level of perceived relational risk. Meanwhile, we also confirm the negative effect of competence-based trust on the level of perceived performance risk and the positive effect of perceived performance risk on contract enforcement, while we find no evidence of the relationship between competence-based trust and contract enforcement.

Theoretical Implications

First, this study contributes to contract theory by providing a deeper understanding of contract enforcement. Most previous studies on contracts focus on contract design or overall contract governance, while failing to differentiate contract design from contract application (Rooks et al. 2006). Because the effectiveness of a designed contract depends on the contract application (Faems et al. 2008), our study focuses on the seldom-studied area of contract enforcement after a contract violation (Antia and Frazier 2001), which is a part of contract application.

Second, our study also complements the current literature concerning antecedents of contract enforcement (Antia and Frazier 2001; Jin et al. 2013). The results reveal that goodwill-based trust and two types of perceived risks affect the severity of contract enforcement. In particular, we provide a nuanced investigation of the relationship between trust and contract enforcement, which appears valuable to resolving existing contradictory empirical results regarding the relationship between trust and contracts. A clear implication from our empirical results is that goodwill-based trust, rather than competence-based trust, and contract enforcement serve as substitutes, even after a contract violation, which extends the scholarly understanding of the applicable context of substitution effects between trust and contract.

Third, risk perception offers a systematic and simple way of making sound contract enforcement decisions in a principal–agent relationship. Governance means the management of risks (Teimoury et al. 2010), and so does contract enforcement. The role of risk perception in this article brings us closer to the actual process of decision-making over the severity of contract enforcement. The complicated relationship between trust and contract enforcement can be more easily comprehended with this realistic decision-making process model. This article also complements TCE's emphasis on minimizing transaction costs from the risk perception perspective. To the best of our knowledge, this is the first attempt to understand decisions regarding contract enforcement from risk taking and risk mitigation perspectives.

Managerial Implications

Our findings provide clear implications for management practice in construction projects. General contractors (in an owner–general contractor relationship) and subcontractors (in a general contractor–subcontractor relationship), collectively called agents in this article, can benefit from the conclusions of this article through understanding the role of trust and perceived risk in dealing with a contract violation. Contract violations are often caused by external, unforeseeable contingencies in the

construction project context, in which case agents should not be overly criticized. Once principals apply severe contract enforcement in such a case, the two parties would fall into conflicts and even litigation, which would do harm to relationship quality and the implementation of projects. The results show that when making decisions regarding the severity of contract enforcement, the principals are highly sensitive to goodwill-based trust in the agents. As such, to avoid a vicious circle of conflicts, an agent's limited resources should be allotted more to improve the other party's goodwill-based trust through increasing communications and enhancing mutual reciprocity, which will help it to cope with disputes arising from a violation more easily. However, trust development can be a daunting task (Wong et al. 2000), and it usually requires previous interactions or prior ties between the two parties (Chen et al. 2018). Consequently, if a violation happens early in a cooperation or, worse still, if it is the first time the two parties have cooperated, there would be insufficient interactions on which to build trust. In this case, our findings imply alternatives to goodwill-based trust, lessening perceived relational risk or perceived performance risk, the importance of which is supported by the strong prediction of contract enforcement by the two types of perceived risk. For example, the violating party could put more resources into the project to send a signal that good project performance is assured. To conclude, this study offers an in-depth understanding of contract enforcement after a contract violation, which is frequent in the construction industry.

Limitations and Future Directions

This study contributes to construction project management both in theory and practice, but our study has several limitations which create the need for future research. First, risk perception is but one perspective from which to understand contract enforcement. An important avenue for future research is to explore other mediating mechanisms accounting for the relationship between trust and contract enforcement, such as three cause attribution dimensions (locus of causality, controllability, and stability) presented by Weiner (1986). The existence of the offsetting positive mediating role of other variables in competence-based trust and contract enforcement could potentially provide indirect evidence of the mediating effect of perceived performance risk. Second, this study only focuses on the principal's responses to the agent's contract violations and not vice-versa. However, in fact, there are many cases in which it is the principal which is violating the contract. Given that asymmetric information and asymmetric power exists in principal-agent relationship, the comparison of the principal's responses to the agent's contract violation and the agent's responses to the principal's contract violation deserves future research. Third, this study was conducted based on samples from the

Chinese construction companies. However, different cultural environments are likely to affect the hypothesized relationships. Although we selected project place and type of partner as proxy variables for Chinese culture, and conducted a supplementary analysis, it might be more worthwhile and convincing for future research to collect data both from Chinese and American construction companies and focus on the generalizability of these verified results. Four, cross-sectional design was used in this study, which is sometimes criticized for difficulties to identify the causality of relationships because of plenty of confounds in the real world. Future research should test the causality of the research framework using longitudinal data or scenario-based experiments.

Data Availability Statement

Data generated or analyzed during the study are available from the corresponding author by request.

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