Model for Organizational Governance Structure Choices in Construction Joint Ventures

S. Ping Ho, A.M.ASCE[1]; Yi-Hsin Lin[2]; Wenyi Chu[3]; and Hsueh-Liang Wu[4]

Abstract: Due to the recent trend of utilizing joint ventures (JVs) in construction, construction firms are faced with the challenges in managing construction JVs. Among those challenges, the choice of organizational governance structure has a profound impact on JV performance, but receives little attention. The objective of this study is to investigate the choice of organizational design in construction of JVs and the underlying rationales of the choice. Through the theoretical lens that integrates both cost and resource perspectives, we develop a model that focuses on four major factors for determining governance structure choices, namely, corporate cultural difference, trust, needs for procurement autonomy, and motivation for learning. A case study of eight JVs in the Taiwan High Speed Rail project was conducted to empirically evaluate the proposed model. It is shown that the eight cases studied jointly replicate the linkage between the hypothesized determinants and the governance structure choices and reasonably support the proposed model.

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Introduction

Today, "organizations do matter" has become a proposition taken rather than a debating issue. From the institutional perspective in sociology, organizations fulfill their purposes through structured arrangement of their members, whose actions are determined by norms, rules, or cultural values. In construction, Mahalingam and Levitt (2007) propose the use of institutional theory as a framework for analyzing conflicts on global projects. From an economic or resource perspective in management, organizations are the most economic means, or use their most competitive resources, to achieve value maximization or similar objectives.

In the construction industry, joint ventures (JVs) are a popular organizational form often used in either large-scale or international projects. Whereas JVs are omnipresent in today's construction market, we only have fractional understanding of the essence of JVs. JVs can provide some direct benefits including reduced risk, improved quality, reduced cost, and completion on time and reduced work at the project level (Cheng et al. 2004). JVs are also critical to large or complex projects because complementary resources can be better pooled or integrated to complete a project, especially for the global projects whose host countries do not have enough capacity or required technology. However, because of the complexity of JVs, the management of JVs is much more difficult than that of usual projects. Research on construction alliances has focused on issues such as: (1) rationales and benefits behind international construction alliances (Badger and Mullign 1995; Sillars and Kangari 1997); (2) governance structures of construction alliances (Ngowi 2007; Chen 2005); (3) performance or organizational success in alliances or joint ventures (Luo 2001; Mohamed 2003; Sillars and Kangari 2004; Ozorhon et al. 2007, 2008). Particularly, we find that the coordination of tasks and control of organization are most challenging in managing JVs due to the complex cross-organizational interfaces and interactions; yet, literature focusing on such issues is very limited. Therefore, in this study, we focus on the characteristics of managerial control and coordination in JVs and investigate the choice of organizational design and why such design can result in better JV management so as to fulfill the goals of JV partners.

To achieve our research objective, we first reviewed relevant literature in governance structure, strategic alliances, and construction JVs (CJVs). We found that although there is extensive literature in management discipline regarding strategic alliances and governance structure, the literature in construction alliances and their governance is very limited. Another major problem is that many relevant findings or theories in management literature need to be reevaluated when they are applied to construction JVs since some of the characteristics of CJVs are very different from that of the JVs discussed in management literature. These issues will be addressed in this study. Second, we identify two major governance structures for CJVs and propose a conceptual framework for governance structure choices. The two distinctive governance structures for CJVs, focusing on the control and coordination aspect of governance, are separately managed JVs (SMJs) and jointly managed JVs (JMJs). We hypothesize that the choice of CJV governance structure is largely influenced by four major variables, namely corporate cultural difference, trust, needs for procurement autonomy, and motivation for learning.

[1]Associate Professor, Dept. of Civil Engineering, National Taiwan Univ., No. 1 Roosevelt Rd., Sec. 4, Taipei 10617, Taiwan (corresponding author). E-mail: spingho@ntu.edu.tw

[2]Post-Doctoral Fellow, Dept. of Civil Engineering, National Taiwan Univ., No. 1 Roosevelt Rd., Sec. 4, Taipei 10617, Taiwan. E-mail: d92521017@ntu.edu.tw

[3]Associate Professor, Dept. of Business Administration, National Taiwan Univ., No. 1 Roosevelt Rd., Sec. 4, Taipei, 10617, Taiwan. E-mail: wenyichu@management.ntu.edu.tw

[4]Associate Professor, Dept. of International Business, National Taiwan Univ., No. 1 Roosevelt Rd., Sec. 4, Taipei, 10617, Taiwan. E-mail: hlwu@ntu.edu.tw

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The organization of the remaining sections is as follows. "Joint Ventures, Managerial Control, and Governance Structures in Construction Joint Ventures" reviews the relevant issues and literature in JVs and defines relevant terms and the governance structures in CJVs. "Model for Governance Structure Choices in CJVs" discusses our theory development and propose a model for the choice of governance structures in CJVs. "Model Evaluation Using Multiple-Case Studies" presents our empirical evaluation of the model based on multiple-case studies. "Conclusions and Limitations" is the conclusion of this study.

Joint Ventures, Managerial Control, and Governance Structures in Construction Joint Ventures

To develop our model, it is critical to introduce and clarify some concepts and terminologies central to our study so that readers may follow our discussions and avoid confusion. Primarily, we will clarify what we mean by "JVs" and "CJVs" in this paper and will discuss the concept of managerial control. Then, we shall formally define two distinctive organizational governance structures for CJVs in terms of their characteristics of managerial control.

JVs and CJVs: What Do We Mean?

The term "joint ventures (JVs)" has multiple meanings both in literature and for practitioners in different industries. JVs sometimes refer to a very general form of alliance, but sometimes refer to a more specific type of alliance that involves the formation of a new entity. When JVs refer to the general form of alliance, JVs are often further categorized into "equity JVs" and "nonequity JVs" in governance structure literature. Hennart (1988) explains that equity JVs "arise whenever two or more sponsors bring given assets to an independent legal entity . . . " and that nonequity JVs describe "a wide variety array of contractual arrangements, such as licensing, distribution, and supply agreements, or technical assistance and management contracts." According to Kogut (1988), JVs can be broadly or conceptually defined as "a selection among alternative modes by which two or more firms can transact," but when it is "narrowly defined," JVs occur "when two or more firms pool a portion of their resources within a common legal organization." To summarize, when JVs are broadly defined, JVs mean alliances or strategic alliances, which can be defined as "voluntary interfirm cooperative agreements" (Parkhe 1993). To avoid confusion, in this paper we shall define "JVs" broadly as a synonym of strategic alliances.

What about the JVs in construction industry? In this paper, we consider "CJVs" and "partnering" two distinctive governance structures in construction alliances. Using equity and nonequity taxonomy of JVs, partnering can be considered nonequity JVs. However, it is not straightforward to judge which category CJVs should belong to. CJVs usually refer to the collaboration through written contracts that enable contractors to share money, abilities, and resources in the duration of a single project (Naylor and Lewis 1997; Morris 1998). CJVs differ from the equity JVs in that usually there will be no new legal entity created for a CJV; yet, the legal and financial bindings between JV partners are no less than that of a new entity. The practice in construction is that, should the project go wrong, all partners are legally responsible for the consequences no matter how tasks are divided among partners or specified in agreements. In this regard, CJVs could provide even greater security to project owners than that in typical equity JVs or corporate JVs since partners in an equity JV are only liable up to the limited equity or assets invested in the new organization, but the CJV partners' liabilities are up to the total equities of their parent companies. The provision of high security to project owners may be one of the major reasons why we seldom find new legal entities created in project-based CJVs. Therefore, we argue that, although there is usually no new entity created in a CJV, a CJV can be considered an "equity JV" due to its corporate-like legal, financial, and managerial bindings. Consequently, in a CJV, each partner's equity share can be represented by the capital invested for completing a project.

In construction literature, three of the entry modes for international markets defined by Chen (2005) are related to JVs: strategic alliances, JV project, and JV company. Contrary to our definition, Chen's "strategic alliances" are narrowly defined as the nonequity JVs and are more often called "partnering" in construction. The "JV project" and "JV company" can be considered as CJVs defined in this paper. Work by Ngowi (2007) investigates how trust plays a crucial role in deciding the governance structure of construction alliances. Ngowi considers "JVs" and "partnering" two distinctive governance structures in construction alliances, where Ngowi's "JVs" are actually the CJVs defined in this paper. The problem of Ngowi's governance structure choice is equivalent to the classic issue in management literature regarding the choice between equity JVs and nonequity JVs. In this paper, as we shall discuss in the next section, our major concern is the finer-grained governance structure choice under the hierarchy type of JVs such as equity JVs or CJVs.

To summarize, we consider JVs a broad term for strategic alliances and, in construction, there are two types of joint ventures/alliances: CJVs and partnering, corresponding to the equity JVs and nonequity JVs, respectively. Note that whereas the purpose of CJVs can be for undertaking a single project or for developing long-term cooperation, in this paper we focus on the most often seen CJVs that are formed to undertake a particular project and will be terminated when the project is completed. For simplicity, we will still use the term CJVs during the discussion.

Governance Structures and Managerial Control

Governance structures and organizational control, as considered by scholars in management, have critical impacts on the performance of an organization (for examples, see Mjoen and Tallman 1997; Gulati and Singh 1998; Pangarkar and Klein 2001; Yin and Zajac 2004). Governance structures can be conceptualized through different sets of decision-making, coordination mechanisms, incentives (Yin and Zajac 2004), and different levels of influence in controlling and coordinating the activities in a partnership (Gulati and Singh 1998). However, most researchers focus mainly on the incentives and ownership dimensions. For example, according to the transaction cost economics (TCE), the two basic types of governance structures are "hierarchy" and "market." The focus of TCE is that, through the arrangement of ownership structure, hierarchy internalizes transactions under one unified ownership, which eliminates transaction costs caused by the misaligned incentives and opportunism. In JV literature, equity JVs are often considered the hierarchy type governance structure and nonequity JVs are considered the market type.

However, in terms of the finer-grained governance structure decisions under equity JVs or CJVs, ownership differentiation in organizational governance becomes less relevant since equity JVs and CJVs are regarded as hierarchy with unified ownership. Therefore, the focus to managing equity type JVs turns to mana-

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gerial control of organization. According to Mjoen and Tallman (1997), the key to managing JVs is the integration, exploitation, and protection of strategic resources and managerial control becomes the underlying mechanism for managing such resources because it determines how partners can influence the decision-making process and the joint venture outcomes. Geringer and Hebert (1989), who made a significant contribution in studying joint venture control, argue that "control was not a strict and automatic consequence of ownership." Mjoen and Tallman (1997) maintain that ownership is but one of the control mechanisms among others such as right of veto or partner's technical superiority, and that "selective control" over some critical activities or resources is often more effective and desirable than overall control. Therefore, in order to more accurately identify and define different governance structures of CJVs, we shall emphasize the "control" perspective of governance structure.

Geringer and Hebert (1989) argue that there are three dimensions of control: the mechanisms of control, the extent of control, and the focus of control. The mechanisms of control are not limited to ownership and may include other options such as the JV board of directors, formal agreements, JV planning process, reporting relationships, etc. The extent of control over a JV refers to the decision-making process in terms of the degree of centralization. The focus of control emphasizes selective or specific control over critical resources or activities and such control is more realistic and effective than hoping to control an entire JV.

Governance Structures of CJVs: JMJ and SMJ

Following Geringer and Hebert (1989) and Mjoen and Tallman's (1997) contributions in JV control, we focus on the governance structures of CJVs and study their finer-grained structures, focusing on managerial control. Based on Geringer and Hebert's operationalization of control, the following perspectives will be adopted to characterize and differentiate the control and governance structure of CJVs: (1) the technical and financial responsibilities and claims associated with each partner; (2) the extent to which major decision making is decentralized to partnering firms; and (3) the levels and needs for coordination. The first perspective of alliance control structures is related to the focus dimension of control, concerning the division of responsible tasks, partners' rights to control, and partners' responsibilities. The second perspective is related to the mechanism and extent dimensions of control, concerning the assignment and duties of board of director, the reporting relationship, and the degree of centralization. The third perspective is mainly associated with the extent dimension of control.

Based on the emphases mentioned above, here we identify and define two distinctive organizational control structures for CJVs: jointly managed JVs (JMJ) and separately managed JVs (SMJ). Although the terms "integrated JVs" and "nonintegrated JVs" are also found in construction practice and literature (Chen 2005) to describe two different modes of governance structures, we prefer not to use these semantically "strong" terms.

JMJ is characterized by: (1) all partners jointly sharing profits and risks of a CJV according to an agreed proportion even though distinctive tasks may still be assigned to each firm; (2) the CJV management team making major decisions, which will be followed by all partners; and (3) the needs for coordination and communication being extended to all levels of a CJV organization. On the other hand, SMJ is characterized by: (1) each firm being technically and financially responsible for its assigned tasks, which are often negotiated; (2) each firm making most decisions related to the assigned tasks without the needs of consent from other CJV partners; and (3) the need for coordination and communication being limited to higher level managers and are minimum for individuals. We do not consider that the governance structure of a CJV will be on the extreme side of either JMJ or a SMJ. Accordingly, the actual governance structure of a CJV should be somewhere in the spectrum between the two extremes.

Note that although JMJ may seem to be more hierarchical than SMJ, JMJ should not be considered the "hierarchy" structure in TCE literature. Instead, since equity JVs are typically considered a variation or instance of hierarchy structure in organization literature, CJVs should also fall into the "hierarchy" category. Our major concern of choice between JMJ and SMJ should be more precisely regarded as the finer-grained governance structure choice under the hierarchy type of JVs such as equity JVs or CJVs.

Model for Governance Structure Choices in CJVs

Integrated Framework of Economic and Strategic Approaches

Academic interest in JVs or strategic alliances can be dated back to economic literature in the late 1970s. Afterwards, a number of managerial studies (Gulati and Singh 1998; Pisano et al. 1988; Pisano 1989; Gulati 1995; GarciaCanal 1996; Oxley 1997, 1999), mainly inspired by TCE (Williamson 1975, 1979, 1985), have analyzed the alliance governance choices and their performance outcomes. TCE frames governance as a cost-minimizing and discriminating alignment between transaction costs and ownership arrangement (Williamson 1985). However, in this paper, we share the broader view held by Matthews (1986) that transaction costs are the overheads of conducting a set of transactions. For CJVs, since the managerial control of organization can be more important than ownership arrangement as we have argued previously, we maintain that the broader view of transaction costs, including the managerial costs, are more appropriate for studying the governance structures of CJVs. In this perspective, we use the term "cost-based perspective" (CBP) to differentiate our view from traditional TCE focus. Contrary to TCE, the proposed CBP emphasized the minimization of the transaction overheads caused by both opportunism and management. Primarily, we argue that corporate cultural difference will increase the managerial costs and trust may help to reduce the costs due to opportunism.

Despite CBP's intuitive appeal, one major weakness of the CBP is that it overlooks JVs' value creation capabilities. In this regard, we incorporate the resource-based view (RBV) of organizational control that emphasizes value creation and sustainability of competitive advantages of a firm through continuous accumulating and utilizing valuable tangible or intangible resources (Das and Teng 2000; Wernerfelt 1984). The exploitation of complementary resources and learning from partners are considered one major source that leads to a long-lived competitive advantage. Mowery et al. (1998) highlight the importance of knowledge complementarities and partner-specific absorptive capacity in the JV partner choice decision.

We argue that an integrated framework fusing CBP and recent RBV together could provide a more comprehensive explanation of the governance structure choices of CJVs. The integrated model proposed in this paper is illustrated in Fig. 1, depicting our corresponding four propositions. In the following sections, we shall derive and discuss each of the propositions.

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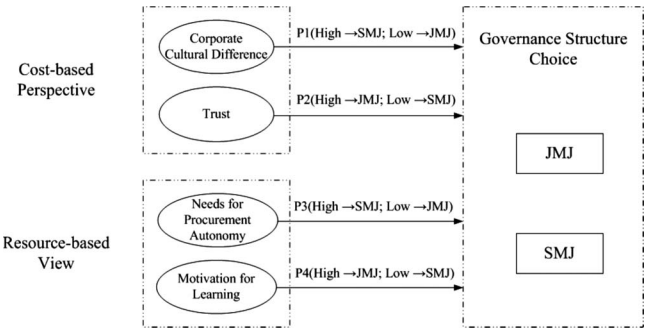

Fig. 1. Model for governance structure choice in CJVs

Cost-Based Perspective of Governance Structure Determinants

Impacts of Corporate Cultural Difference

Cultural difference may include national, corporate, and occupational differences (Salk and Shenkar 2001). Organizational culture refers to the set of values, beliefs, understandings, and ways of thinking that are common to the members of an organization or corporation (Daft 2001). Many problems experienced by firms in JVs can be traced back to cultural difference (Meschi 1997; Horii et al. 2004). For example, global project participants tend to persist with their own cultures, work practices, or specific "logics" they are accustomed to (Mahalingam and Levitt 2007).

Greater corporate cultural distance often results in greater differences in their organizational and administrative practices, employee expectations, and interpretation of and response to strategic issues (Park and Ungson 1997). In their modeling of corporate cultural difference of international JVs, Horii et al. (2004) emphasize specifically the *practices* and *values* dimensions and study how different governance structures under various project situations react to cultural differences.

Corporate cultural difference plays an important part in making the choice of governance structure because it often increases the transaction costs, including information transmission cost, contracting cost, and monitoring and coordination costs. The impacts of corporate cultural differences are especially emphasized in CJVs because, first, many CJVs are international JVs, and second, problems resulting from corporate cultural differences are more difficult to resolve in CJVs due to limited project duration.

Some argue that the high opportunism costs due to the uncertainty induced by cultural difference call for the use of "hierarchy," and they conclude that equity JVs are preferable to nonequity JVs given greater cultural distance (see Gulati 1995; Sengupta and Perry 1997; Pangarkar and Klein 2001). Nevertheless, because the choice of JMJ or SMJ concerns the control of CJVs, instead of the JV ownership arrangement such as hierarchy or market, a higher corporate cultural difference does not necessarily lead to the use of JMJ. Therefore, concerning the governance structure choice in CJVs, we shall emphasize the managerial costs caused by cultural difference.

The key issue is what control structure minimizes transaction costs under different levels of corporate cultural distance. Buckley and Casson (1996) maintain that "cultural homogeneity, acting through shared beliefs, reduces transactions costs by avoiding misunderstandings…" In contrast, if the corporate cultural difference is large, it should be comparatively costly to jointly manage a JV because there will be a lack of shared beliefs and values. Since the JMJ structure involves much higher degrees of coordination and communication, a larger corporate cultural difference will naturally increase the difficulty of collaboration and potential conflicts significantly. Therefore, following this logic, the SMJ, characterized by divided responsibility and minimal coordination and communication, can reduce the conflicts and costs of coordination that arise from organizational cultural differences. This phenomenon is commonly observed in the control of international subsidiaries or colonies, where the key management personnel or political leaders are often from the local country to reduce the potential conflicts and the cost of management. Accordingly, we argue that when the corporate cultural difference is larger, SMJ would be a more efficient form that reduces transaction costs, and vice versa.

Proposition 1: A CJV with larger corporate cultural differences among partners is more likely to adopt SMJ as the organizational control structure, while a CJV with smaller corporate cultural differences is more likely to adopt JMJ.

Impacts of Trust

Trust is built upon an expectation that one partner has for another in the partnership such that their interaction is predictable and the behavior and responses are mutually acceptable to one another (Harrigan 1985). A distinctive characteristic of JVs is that partners have to deal with the uncertainty in the environment and that arising from each other's behavior (Harrigan 1985). Although TCE focuses on the transaction costs resulting from opportunism and does not regard trust as a common or realistic factor that can govern transactions, organization scholars (Dyer and Chu 2003; Mohr and Spekman 1994; Zaheer et al. 1998) have recently considered trust to be a key relational factor or mechanism contributing to alliance success. Ngowi (2007) shows that it is possible to establish trust among partners despite existing incentives for opportunism. Trust among firms indicates the positive belief that a partner will not take advantage of other partners (Powell 1990). Once trust is established, opportunistic behaviors by partners may become a minor issue of concern.

Accordingly, based on the broader view of transaction costs (Matthews 1986), higher trust will reduce many transaction costs such as monitoring, outcome verification, communication, etc. Hence, when the level of trust is low, it should be comparatively expensive to jointly manage a joint venture and the partners will search for the best possible way to divide their tasks and corresponding responsibilities; which means, SMJ will be a better control structure in this case. Taking the control perspective of governance, we submit that if the contracting firm has a higher level of trust toward other partners, JMJ, characterized by closer collaborations and more risk sharing, will be a more economic form for CJVs in achieving their JV objectives.

Proposition 2: A CJV with greater trust among partners is more likely to adopt JMJ, while partners with less trust among them will tend to adopt SMJ.

Resource-Based View of Governance Structure Determinants

Impacts of Needs for Procurement Autonomy

The procurement of construction inputs such as equipment, materials, and subcontractors is a critical process and activity in a large-scale construction project. The major procured items may include materials, subcontractors' work, and equipment. Particularly in the construction industry, the success of a contracting firm lies in its capability to acquire input at the best price, quality, and

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reliability (Warszawski 1996). Thus, the procurement strategy or capability could become a major source of the competitive advantage of a construction firm and the decisional power over procurement of a CJV is crucial to a partner's profitability. According to the RBV, the procurement advantage may represent a tangible resource of a construction firm. For example, when there is serious information asymmetry in the market, procurement through specific channels that are more informed or trusted may reduce transaction costs significantly. When a firm has long-term relationships with particular suppliers or subcontractors, the firm may benefit from such a transaction due to a better price or lower variation in quality. When the exploitation of procurement advantage is considered crucial to a partner's profitability, the partner will tend to require more flexibility or fewer restrictions imposed by other partners toward the procurement for the project. They may center on higher flexibility in choosing their own subcontractors or suppliers, and demand more independence between partners. This can be understood from the "focus" dimension of control argued previously. That is, when profits from procurement advantage are strategically important to a partnering firm, it is desirable to balance the control through various procurement arrangements, where each partner has focused control over specific procurement scope. For example, procurements can be decentralized and divided according to dollar amount, assigned tasks, or each partner's comparative purchase advantage.

In SMJ, each firm makes most decisions related to the assigned tasks without the need of consent from other JV partners. Each partner is financially responsible for specific tasks, including procurement. Under these circumstances, partners that put more emphasis on procurement autonomy would prefer to adopt SMJ as the control structure. The third hypothesis for the choice of governance structure in CJVs is proposed as follows.

Proposition 3: A CJV where partners have higher needs for procurement autonomy is more likely to adopt SMJ, while a CJV with fewer needs from partners for procurement autonomy is more likely to adopt JMJ.

Impacts of Motivation for Learning

Organizational learning from partners represents a primary motivation for firms to enter into alliances (Peng 2001). Learning helps to achieve the objective of internalizing the desired external intangible resources such as know-how and expertise. A firm's organizational learning capability can create competitive advantages (Ulrich and Lake 1991; Inkpen and Crossan 1995). Khanna et al. (1998) emphasize that by picking up skills from its partners a firm can actually unilaterally earn private benefits. Thus, the learning process can be considered the center to the evolution of a JV (Doz 1996) and one major objective of a JV.

A firm's motivation for learning refers to its tendency to view collaboration as an opportunity to learn (Hamel 1991). A JV firm that has a strong motivation for learning will try to exert particular controls or influence over the organization that may facilitate the internalization of its partner's know-how for private gains. In this case, JMJ may provide a better environment for learning because it provides a unified chain of command, requires more cooperation between individuals from different partners, and integrates operating procedures. In particular, since "learning by doing" is a major approach to obtaining new knowledge and skills in the construction industry, learning is often naturally achieved under joint operation and management even though the partner with advanced knowledge may not intend to transfer the knowledge. This is also why the motivation for learning need not to be "mutual." On the other hand, due to the characteristics of firms' resources, some firms in CJVs may not have the need to internalize other partners' knowledge. For instance, firms may participate in CJVs primarily for entering a new or unfamiliar market, instead of internalizing particular technology or complementary resources. Therefore, from the organizational control perspective, when learning is not an objective of a CJV or the need to internalize complementary resources is low, the control through advanced technology or capability will be emphasized and partners may prefer SMJ as the control structure. When learning is an objective of a CJV, the need to protect certain resources is lower and the objective to internalize complementary resources is easier to achieve through jointly managing the joint venture. The last proposition is given as follows:

Proposition 4: A CJV with stronger motivation in partners for learning is more likely to adopt JMJ, while a CJV where partners are less motivated in learning is more likely to adopt SMJ.

Further Discussions: Model Comprehensiveness and Model Applicability

The development of the model described leads to some important questions. Are the hypothesized determinants complete? What is the relative importance of these determinants? How can one apply this model in practice when the impacts of different determinants go opposite directions?

Aren't there other factors that influence the governance structure decisions in CJVs? Yes, there are many others. Yet, we are trying to identify those of higher importance. From a cost-based perspective, there are two reasons why the model focuses on corporate culture and trust only. First, recent studies in organizational literature have argued that the existence of certain organizational advantages such as positive feelings toward the transactional partners between the two parties can effectively attenuate each party's tendency toward opportunistic behaviors and can play a more dominant role than traditional external market conditions in determining the appropriate governance mechanisms (Ghoshal and Moran 1996). Trust and corporate culture, two variables that reflect some dimensions of organizational advantages, were thus employed as main variables of CBP in our research. Second, since the choice between JMJ and SMJ emphasizes the broader view of transaction costs, particularly managerial, typical factors such as asset specificity and uncertainty related to opportunism become less important in deciding CJV governance structures. Therefore, although we are not trying to rule out the possible influence of cost related variables, for model parsimony, only the two major variables are finally incorporated.

From the RBV perspective, why do we focus on procurement autonomy and learning only? During the past decade, RBV has become the most widely cited management theory in management literature (Ramos-Rodriguez and Ruiz-Navarro 2004). Different scholars focus on different aspects of RBV and many variables have been proposed. In general, both tangible and intangible resources should be examined (Grant 1996). Thus, we consider both resource types and developed one variable for each accordingly: "procurement autonomy" refers to the exploitation of tangible resources, while "learning" refers to the internalization of other partners' intangible resources. In recent literature on JVs and international collaboration, one construct that particularly catches our attention is the "learning intent" of partners (Hamel 1991; Hamel et al. 1989). According to Hamel et al. (1989), learning intent is particularly important in determining the success or failure of international collaborations when there exists a competence gap or information gap between the two partners. Therefore, we

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believe the construct of "learning" has overlapped with other possible impacting factors; for example, when the competences or information gaps between two partners are large, companies tend to have a stronger motivation for learning.

There are other important factors that may also influence the governance structures decisions, such as the project types, project complexity, and the institutional environment. For example, institutional theorists argue that organizational actions are not only influenced by economic rationales but are also shaped by three forces of isomorphism, including regulatory, normative, and social/cultural factors (Scott 2001) that lead to coercive, normative, and mimetic isomorphism, respectively (DiMaggio and Powell 1983). Therefore, organizations that operate in different institutions may have different organizational arrangements. As observed in China and many other developing countries, governments that act as project owners and focus on knowledge transfer through CJVs, can explicitly give their preference to those bidding teams who will adopt the JMJ structure. This pilot study does not intend to cover all possible theoretical perspectives and all variables that might influence the design of CJVs. Future research can incorporate other theoretical perspectives (such as the institutional theory) and consider other contingency variables, such as the project complexity or international entry strategy, to develop a more comprehensive model. Therefore, when the model is applied in choosing CJV governance structure, "other things being equal" is assumed, i.e., "ceteris paribus."

Are the four determinants equally important? For example, based on our prediction, a large corporate cultural difference leads to SMJ, while high learning motivation leads to JMJ. Which one will dominate? Just like most conceptual frameworks, our model can only explain the partial causal relationship between independent and dependent variables, ceteris paribus. Although it is almost certain that the four determinants are not equally important and some interaction effects might also exist among variables, the polled and mixed effects cannot be detected in this theoretic development. This paper is not able to provide statistical evidence to further compare the relative explanatory power of the four variables. Statistically speaking, stepwise regression models plus the Chow test or a hierarchical linear model may help in obtaining their relative weights "in average," if large-sample data are available. However, even if there is statistical evidence, we believe that the relative importance of proposed variables may still vary significantly in each unique project and the statistical results may not be directly applied to every project. To practitioners, the value of this model is to offer a new perspective and a set of constructs to weigh the impacts of governance structure. Thus, it may be better off to leave the relative effect of each factor for the practitioners' judgment based on each project's unique characteristics.

Model Evaluation Using Multiple-Case Studies

Case study is an empirical inquiry and an important research methodology in management and social sciences. According to Yin (2003) and Flyvbjerg (2006), case studies are suitable for both generating and testing hypotheses. When a case study is used for empirical purposes, it can be called an "explanatory case study," suitable for causal study. Our empirical strategy is to examine whether the actual governance structure choices can be explained from the perspective of the proposed model and be replicated in different cases. Such empirical strategy is different from the strategy of using case study for exploratory research and inductive analysis as in Eisenhardt (1989).

Cases Selection, Data, and Case Background

Cases Selection

The case being studied is the Taiwan High Speed Rail (THSR) project, a $15 billion mega project that involves eight major CJVs in 12 construction contracts. This project was selected mainly because: (1) there were eight JVs/cases in the same project environment, presumably providing a better controlled environment; and (2) both types of CJV governance structures were presented. Concerning the first reason, since the eight cases were all from one single construction project, they acted in the same "organizational field" (Scott 2001) and faced very similar environmental forces. Therefore, the possible influence of environments on the eight cases might be neglected.

Data Collection and Reliability

We conducted interviews with 12 top managers associated with JV partnering firms and three top managers from the client, the THSR Inc., following a preplanned interview protocol. The protocol is designed to obtain: (1) relevant background or numeric information; (2) the assessments of the hypothesized determinants and the organizational control structures of a CJV; and (3) the explanations for the concerned events. A second round of interview was conducted in early 2007 so as to clarify some unclear information collected in the previous round and to resolve some confusion during the analysis.

Background of CJVs Studied

The THSR project is the largest transportation infrastructure in Taiwan. This project is developed through the build-operate-transfer (BOT) scheme and is considered one of the largest projects in the world delivered through BOT. In the THSR project, there are eight major CJVs responsible for the 12 contracts of civil engineering works, not including rail construction and station construction. The budgeted costs for the 12 contracts are around $5.3 billion. Table 1 summarizes the basic information of each JV team and its associated contracts, including contract costs, partnering firms, and the equity ratios invested by each JV partner. Among the eight JVs, six adopted JMJ, and two adopted SMJ. Although officially there were more than eight JVs, some JVs were treated as one after excluding those partnering firms that either withdrew at a very early stage or had insignificant passive equity shares.

Measurement of Hypothesized Determinants

Measuring "Corporate Cultural Difference"

In this study, we treated "culture" as a mix of national, organizational, and professional cultures, and we evaluated the "corporate cultural difference" by examining: (1) differences in corporate values; and (2) communication problems. The first aspect reflects both organizational culture and professional culture. For example, in C210, C215, and C220, the consistency (or inconsistency) of corporate values mainly reflected the organizational value systems of transactional partners, i.e., organizational or national culture; while in C280, different professional backgrounds and expertise of their partners caused different corporate values and practices. The second aspect partly results from different nationalities. In terms of the measurement of this construct, we first separately evaluated the two aspects for each case by placing a "consistent" or "inconsistent" label for the first aspect, and an "insignificant" or "significant" label for the second aspect. Then

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Table 1. Background Information of JVs and Contracts Studied

JV and contracts	Contract price amount ($)	Ratio of price amount	Foreign partner	Local partner (Taiwan)	Governance structure
C210 C215	378,788,000 561,242,000	Obayashi:Fu Tsu=55%:45%	Obayashi (Japan), leading	Fu Tsu	JMJ
C220	369,697,000	Daiho:Chiu Tai:Kou Kai =40%:30%:30%	Daiho (Japan), leading	Chiu Tai Kou Kai	SMJ
C230 C240	368,788,000 342,930,000	Hyundai:Chung Lin=75%:25% Hyundai:Chung Lin=80%:20%	Hyundai (Korea), leading Hyundai (Korea), leading	Chung Lin Chung Lin	JMJ
C250	686,364,000	Hochtief:Ballast Nedam:Pan Asia =55%:30%:15%	Hochtief (Germany), leading Ballast Nedam (Holland)	Pan Asia	JMJ
C260 C270	575,151,000 653,636,000	Bilfinger Berger:CEC=50%:50%	Bilfinger Berger (Germany), leading Bilfinger Berger (Germany)	CEC CEC, leading	JMJ
C280	496,939,000	Samsung:Doosan:IE&C =51%:29%:20%	Samsung (Korea), leading Doosan (Korea)	IE&C	SMJ
C291 C296	399,909,000 80,303,000	Evergreen:Shimizu=58%:42%	Shimizu (Japan), leading	Evergreen	JMJ
C295	454,485,000	Evergreen:Italian-Thai:PEWC =50%:35%:15%	Italian-Thai (Thailand), leading	Evergreen PEWC	JMJ

we aggregated the two labels, as well as the respondents' overall comments, to assess the overall level of corporate cultural difference of each case.

To our surprise, we found that nationality or language difference alone would not cause significant communication problems or the sense of corporate cultural difference. We observed that the sense of cultural difference in a JV seemed to be greatly reduced when the foreign firms were considered much more advanced than local firms; according to the interview, "such phenomenon was mainly due to the local firms' willingness to adapt themselves and their intentions to learn from foreign firms."

Measuring "Trust"

To date, scholars have had no universal accepted academic definition of trust (Rousseau et al. 1998). In this research, we operationalized trust as "belief toward partners," which is very close to the concept of "trustworthiness" proposed by Sheppard and Sherman (1998). By asking interviewees where the trustworthiness of the partners comes from and how strong the trustworthiness is, we were able to conduct a qualitative assessment of the level of trust in each case (ranging from "high" to "low").

We found that many firms exhibited much lower ex-post trust after the "honeymoon" period of cooperation. Many factors, such as miscommunication, unrealistic expectation, conflicts, or even "corporate cultural difference," could contribute to the disappointment and the loss of trust. In general, we found that good reputation and upbeat experiences of past cooperation were the most crucial ingredients for a high level of mutual trust.

Measuring "Needs for Procurement Autonomy"

The data obtained from the interview regarding this variable were not satisfactory, mainly because respondents considered the procurement strategy a sensitive issue. The main criteria used to evaluate this construct include negotiation efforts and efficiency in "joint" procurement and interviewees' responses. According to the respondents, since the decisional power over procurement is important to JV parent firms, the split of the procurement decisional power was usually made by partners' top management through negotiations. Therefore, we consider the negotiation efforts in joint procurement an indication of the extent to which each partner demands the procurement decisions to meet their specific requests.

Note that there may be other factors that influence the negotiation efforts; for example, among those factors, project complexity or type can be an important one. However, we found that since the contracts and JVs studied were all under the THSR project and each was responsible for a certain length segment along the rail, these contracts were very similar in terms of project/contract complexity and type. Therefore, negotiation efforts should be able to reasonably indicate the needs for procurement autonomy in this study under the controlled environment studied.

We also found that the procurement in most JVs that adopted JMJ was divided into three parts: foreign or technically superior partners were often assigned to the procurement of special equipment or parts, local partners were assigned to the procurement of local materials or subcontractors, and the rest of the items were procured jointly. Based on our interview, division of procurement was desired not only because of the exploitation of each partner's procuring advantages, but also because of the sense of "fairness/equity" when each benefitted from assigned procuring items.

Measuring "Motivation for Learning"

Most JVs that adopted JMJ considered learning an objective of joining the JV. In general, foreign partners focus more on the learning of culture, business practice, suppliers, and subcontractors in Taiwan, whereas local partners emphasize learning specific

Table 2. Brief Summary of Conditions of Hypothesized Determinants

JV team	Corporate cultural difference: corporate values reflected in partners' focuses	Trust: bases of trust	Needs for procurement autonomy: negotiation efforts for joint procurement	Motivation for learning: what to be learned?
C210/ C215	• Consistent. • Focused on quality and safety.	• Past cooperation. • Partners' good reputation.	• The procurement was time efficient. • Managers were fully delegated.	• For foreign partner: to learn the local procurement and business practices. • For local partner: to learn tunneling techniques.
C220	• Inconsistent. • Foreign: focused on project quality and the profit of the JV. • Local: focused more on firm's profit.	• Mainly from credit information service, a weaker ground of trust.	• The local partners stepped out.	• Nothing in particular.
C230/ C240	• Inconsistent. • Foreign: collectivism and strong leadership. JV performance had highest priority. •Local: individualism.	• Mainly from credit information service.	• The negotiation process was inefficient and delayed project schedule. • Managers were inadepuately delegated.	• For foreign partner: to learn the culture, management style and business information in Taiwan. • For local partner: to learn project management.
C250	• Consistent. • Conservative, focused on risk control.	• Partners' good reputation.	• The procurement was time efficient. • Managers were fully delegated.	• Nothing in particular.
C260/ C270	• Consistent. • Focusing on quality. • Slight complaint of foreign partner's sense of superiority.	• The foreign partner's good reputation. • The local partner was the THSR's major shareholder.	• Extensive negotiation was involved. • Managers were fully delegated.	• For foreign partner: to learn seismic design for high speed rail civil work. • For local partner: to learn tunneling techniques.
C280	• Inconsistent. • Had considerable disagreements between two foreign partners due to their different specialties and the change of business roles.	• Past cooperation. • The local partner was wary about the disadvantages due to her weak position in equity share.	• The procurement was time efficient (only very limited negotiation was involved due to the SMJ).	• For Samsung: nothing in particular. • For Doosan: to learn how to conduct business in Taiwan. • For IE&C: to learn the technology and project management from Samsung.
C291/ C296	• Consistent. • Focused on the benefit of JV team.	• Shimizu's good reputation. • Evergreen was the THSR's major shareholder.	• The procurement was time efficient. • Managers were fully delegated.	• For foreign partners: to learn how to conduct business in Taiwan. • For local partner: to learn construction management and underground pipelines removal.
C295	• Consistent. • Focused on the benefit of JV team.	• Italian-Thai was a reputable ENR top 150 international contractors. • Evergreen was the THSR's major shareholder.	• Same as C291/C296.	• For foreign partner: to learn the local markets for materials and subcontractors. • For local partner: to learn construction management.

technologies/skills or project management. The measurement of this variable is mainly based on respondents' opinions, what the JV partners want to learn, and what actions they actually took in order to learn.

Within-Case Analyses of Cases Studied

Table 2 summarizes the conditions of four hypothesized determinants according to the measuring criteria discussed above. Table 2 is expressed succinctly so that easy comparison among different JVs can be made. In this section, we focus on the analysis within each case and examine whether each JV's choice of governance structure can be explained from the perspective of the model. Cross-case analysis will be performed in the next section.

Analysis of C210/C215 JV: Why JMJ?

In C210/215 JV, Obayashi was the foreign and leading partner and Fu Tsu was the local partner. Our study shows that, from the perspective of the proposed model, trust and learning may explain why JMJ was adopted as the governance structure.

First, the high level of trust among partners in this JV provided a very good environment for adopting JMJ. As one respondent put it, "without such trust, they could never work so closely." Importantly, their trust was solidly built upon their upbeat cooperation experiences about 10 years ago in the Taipei Metropolitan Rapid Transit project. Moreover, since Obayashi was one of the top construction firms in the world, Fu Tsu believed that Obayashi was well qualified in construction techniques, project management, and financial transparency. Obayashi also believed that "Fu Tsu was one of the reputable construction firms in Taiwan and that Fu Tsu would never do anything to damage the established reputation."

Second, the use of JMJ structure in this JV was mainly motivated by the partners' intentions to learn from their collaborator. According to the interview, both partners considered learning from the other partner an objective of this JV. With no experience in tunneling, Fu Tsu was highly motivated to learn tunneling techniques from experienced Obayashi. On the other hand, Obayashi also hoped to learn the procurement practice, market information, and human resource information in Taiwan. In order to facilitate their learning, according to the respondents, "they purposely mixed both partners' employees in work teams and arranged frequent routine meetings before and after work every day to not only promptly resolve problems encountered but also provide platforms for learning." JMJ structure was the one that provided the desired close working relationship and learning environment.

Analysis of C220 JV: Why SMJ?

The C220 JV was formed by the leading partner, Daiho, from Japan, and the local partners, Chiu Tai and Kou Kai. Unfortunately, shortly after the construction, Chiu Tai and Kou Kai withdrew because of their financial distress. The C220 JV was one of the two JVs in our case study that adopted the SMJ structure, where Daiho was responsible for the tunnel engineering, Chiu Tai for the foundation, and Kou Kai was for the bridge engineering.

Since it was relatively late in the procurement stage when Daiho acted to form the JV, major local contractors had already committed to other JVs and Daiho was left with only a limited choice of partners from smaller local construction firms. To evaluate the smaller and lesser known firms, Daiho had to rely heavily on the business credit information service, a much weaker ground for trust. Therefore, the trust among C220 JV partners was only at the minimum accepted level. Furthermore, according to the interview, none of the partners considered "learning" an objective of their participation in this JV. "The needs for procurement autonomy is not considered high or important enough to be the motivating factor of adopting the SMJ structure" according to the interview. Not surprisingly, from the perspective of the proposed model, the adoption of the SMJ structure in C220 JV can be explained by the lack of sufficient trust and the low motivation for learning.

Analysis of C230/C240 JV: Why JMJ is Not Working?

The C230/C240 JV was formed by Hyundai, the foreign and leading partner, and Chung Lin, the local partner. It turned out that their cooperation was not very smooth and Chung Lin withdrew their shares and stepped out of the JV about 1 year after the project began. This JV adopted the JMJ structure. This JV demonstrates the impacts of trust and corporate cultural difference on JV governance and the importance of having a good evaluation of governance structure determinants before the formation of JVs.

First, during the formation of the JV, both parties had relatively strong motivations for learning. As a newcomer in Taiwan's market, "Hyundai was eager to learn Taiwan's culture, management style, and information of local subcontractors, etc." During the first year's cooperation, according to Hyundai, "many staffs cooperated with Chung Lin and were well guided by Chung Lin in learning the business practice and the market in Taiwan." Meanwhile, due to its limited experience in heavy construction, Chung Lin was interested in gaining project experience and certain skills in tunneling and viaduct construction. Second, a corporate cultural difference between two partners was considered insignificant when the JV was formed. According to Hyundai, "we didn't think that there would be major corporate cultural problems since both partners had oriental minds and cared about reputations." As a result, the adoption of JMJ for this JV can be explained by the high learning motivation and low assessed corporate cultural difference, despite their high demands for procurement autonomy. In terms of procurement autonomy, since the local partner was highly concerned with the joint procurement decisions, its JV manager was not adequately delegated to make those decisions, causing excessively high negotiation efforts under the JMJ structure.

Although other factors might have also contributed to the withdrawal of Chung Lin, the dissolution of this JV was a good example illustrating that an "inappropriate" choice of governance structure might have negative impacts on a JV. From the perspective of the proposed model, the ex-post high leveled corporate cultural difference and ex-post low leveled trust may explain why the JMJ structure became inappropriate. First, substantial cultural difference problems were experienced after their project began. Consistent with the general perception of Korean culture, Hyundai's management style was toward collectivism and strong leadership. An interviewee stated, "Hyundai was highly mission oriented that project performance had much higher priority than individual's benefits; for example, *voluntary* work overtime was considered normal during the period of a tight or delayed schedule." On the contrary, the culture of the local partner was toward individualism. The conflicts due to cultural differences contributed substantially to many difficulties in managing the JV, such as blame and complaints, coordination problems, and a sense of unfairness. These conflicts could have been largely reduced if SMJ was adopted. Second, concerning the trust, their already weak grounds for trust were shaken and worsened by many conflicts due to cultural problems and an inefficient procurement process.

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After about 1 year, Chung Lin withdrew their shares and stepped out of the JV.

Analysis of C250 JV: Why Switched from SMJ to JMJ?

The C250 JV was formed by Hochtief from Germany, the leading partner, Ballast Nedam from Holland, and Pan Asia, the local partner. JMJ was adopted as the governance structure. Importantly, we observe the impacts of trust on the choice of governance structure in this JV.

Since the foreign partners had no JV experience with Pan Asia, a medium sized Taiwan construction firm, their trust toward Pan Asia was mainly based on Pan Asia's reputation in some international projects and could not be considered very high. Plus, according to one respondent, "learning was neither considered an objective of this JV, nor part of the collaboration deals." Therefore, the original plan at the beginning of the JV was to adopt the SMJ structure. However, shortly after winning the contract, the 921 earthquake, one of Taiwan's strongest earthquake, shook Taiwan and, as a result, the foreign partners had to closely interact with the local partner to cope with the stricter seismic design standard. According to the respondent, "much deeper trust was established because of the aforementioned close interactions and the leading foreign partners' faith in Pan Asian was the major reason that caused the JV to switch to the JMJ structure." As a result, this JV adopted the JMJ structure under a high level of trust and low corporate cultural difference, even though the motivation for learning was very low.

Analysis of C260/270 JV: Why JMJ?

The C260/270 JV was formed by Bilfinger Berger from Germany and the CEC, the local partner, with equal equity shares. Bilfinger Berger was the leading partner in C260 and CEC was the leading partner in C270. From the perspective of the proposed model, the low corporate cultural difference, high trust, and high motivation for learning together may explain why JMJ was chosen as the governance structure of this JV.

First, while German companies were generally more rigorous and stringent on their quality standard, the corporate cultural difference was considered low because the local partner CEC, a top contractor in Taiwan, also highly valued the quality of their work. Second, based on the fact that Bilfinger Berger was one of the top construction firms in the world and CEC was a top contractor in Taiwan and also the leading founder of the THSR Corporation, they strongly trusted each other during the JV formation stage although they had no experience of cooperation in the past. Third, both partners in this JV had a very strong motivation for learning which could be considered the major motivating factor for the adoption of JMJ given the satisfactory conditions in corporate cultural difference and trust, according to the respondents' comments. Despite being an experienced contractor, Bilfinger Berger had limited knowledge of seismic design for the rail's civil work and thus had a strong motivation to learn from this project. The local partner, CEC, being the top contractor in Taiwan and hoping to become an international contractor, aimed to learn tunneling techniques from its partner.

Analysis of C280 JV: Why Switched from JMJ to SMJ?

The C280 JV was formed by two Korean partners, Samsung and Doosan, and a local partner, IE&C, where Samsung was the leading partner. The equity share ratios for Samsung, Doosan, and IE&C were 51, 29, and 20%, respectively. Three months after winning the contract, they decided to switch their governance structure from the JMJ to SMJ. Our analysis showed that the high corporate cultural difference and great needs for procurement autonomy played an important role in their eventual choice of the SMJ structure.

This JV gives a good example illustrating that corporate cultural differences can be significant between partners from the same country and how the cultural problems can influence the choice of governance structure. In this JV, different professional backgrounds and specialties, i.e., professional culture between Samsung and Doosan caused different corporate values and practices. Doosan was the top supplier of power plant equipment in Korea and had little experience in heavy civil construction. In Korea, Samsung usually worked as the civil work contractor for Doosan. Given their business relationship and cooperation experience, it was not expected that there would be any serious corporate cultural problems between them. The ex-post high-leveled corporate cultural differences and subsequent conflicts between Samsung and Doosan in this JV were mainly due to the role change in their business relationship and their very different opinions in managing international construction projects. According to one respondent, "Doosan seemed to have difficulty in adjusting its role in the new type of liaison as a partner with less equity shares, whereas Samsung took a very strong leading position and attitude." "Samsung, having much more experience than Doosan in international construction projects, had many disagreements with Doosan in managing international projects." Such organizational and professional cultural issues were further "intensified by the top managers' strong characters, which are often observed in Korean managers." According to the respondent, "the costly conflicts due to corporate cultural differences were the main reason why the governance structure was switched from JMJ to SMJ shortly after the construction." Note that although there were still some conflicts between Samsung and Doosan, "the SMJ structure was key to reducing many potential conflicts and to make this JV possible."

"Autonomous procurement was very important to the individual partner's profitability in this JV," according to the respondents. As a result, most items in the contract were divided into three parts and separately assigned to and managed by each individual partner. From the perspective of the proposed model, the importance of each partner's procurement autonomy in this JV may have also contributed to the eventual adoption of the SMJ structure.

Analysis of C291/C296 JV: Why JMJ?

The C291/C296 JV was formed by Shimizu, the foreign and leading partner, and Evergreen, the local partner. Our analysis shows that, from the perspective of the proposed model, the low corporate cultural difference, high trust, and high motivation for learning in this JV together may explain the adoption of the JMJ structure.

First, the corporate cultural difference in this JV was considered insignificant. In terms of corporate values, both partners focused on the overall benefits of a JV and believed that an individual partner's profit depended on the success of the JV. Second, even though they had no previous cooperation experiences, the trust between partners was very high because Shimizu is a highly reputable major international construction firm and Evergreen is one of THSR's major founding developers. Third, most importantly, "learning" was a very strong motivating factor of adopting the JMJ structure in this JV. Evergreen, the local partner, was motivated to learn construction management of international projects and special techniques such as the removal of hazard our underground pipes, mainly because it was the first

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Table 3. Summarized Measurement for Model Evaluation

JV team	Corporate cultural difference	Trust	Needs for procurement autonomy	Motivation for learning	Governance structure	JV success
C210/ C215	$L^{(J)a,b}$	$H^{(J)}$	M	$H^{(J)}$	JMJ	Satisfactory
C220	M	$L^{(S)}$	M	$L^{(S)}$	SMJ	Local partners went bankrupt (not caused by this JV)
C230/ C240	(ex-ante) $L^{(J)}$	M	$H^{(S)}$	$H^{(J)}$	JMJ	Difficult to work together
	(ex-post) $H^{(S)}$	$L^{(S)}$	$H^{(S)}$	$H^{(J)}$	N/A[c]	Early dissolution
C250	(ex-ante) $L^{(J)}$	M	M	$L^{(S)}$	(Originally) SMJ	Satisfactory
	(ex-post) $L^{(J)}$	$H^{(J)}$	M	$L^{(S)}$	(Switched to) JMJ	
C260/ C270	$L^{(J)}$	$H^{(J)}$	M	$H^{(J)}$	JMJ	Satisfactory
C280	(ex-ante) $L^{(J)}$	M	$H^{(S)}$	M	(Originally) JMJ	Difficult to work together
	(ex-post) $H^{(S)}$	M	$H^{(S)}$	M	(Switched to) SMJ	Cooperation became possible
C291/ C296	$L^{(J)}$	$H^{(J)}$	M	$H^{(J)}$	JMJ	Satisfactory
C295	$L^{(J)}$	$H^{(J)}$	M	$H^{(J)}$	JMJ	Satisfactory

[a]H=high, M=moderate, and L=low.

[b](J): the assessed level favors JMJ; (S): the assessed level favors SMJ; and moderate level is considered not favoring JMJ or SMJ.

[c]N/A=not applicable.

time that Evergreen participated in a CJV and Evergreen aimed to become a top construction firm in Taiwan. According to the interview, "to facilitate the learning, Evergreen purposely assigned key persons, those highly diligent and motivated engineers, to jointly manage the construction work." The foreign partners had more advanced skills and technology and were expected to guide the local partner as an important part of the collaboration deal.

Analysis of C295 JV: Why JMJ?

Note that although the partners of this JV and that of C291/296 JV were not exactly the same, the condition of each determinant variable in this JV was very similar to that in C291/C296 JV, mainly because Evergreen was the major equity holder in both JVs and thus could impose similar partner selection criteria. Similar to C291/296 JV, in this JV, Evergreen's strong motivation to learn under the satisfactory trust and cultural conditions for the JMJ structure can explain why this JV adopted the JMJ structure.

Overall Evaluation of Proposed Model

In this section, we show that the proposed model can also be supported by the "theoretic replication" (Yin 2003) through the cross-cases analysis. Table 3 summarizes the study results. The last column in Table 3, "JV success," is judged mainly according to the respondents' (including the project owner's) comments and some relevant events and we use "satisfactory" to indicate a positive conclusion of JV success. As shown in Table 3 and explained in each case analysis, four cases demonstrate that the JV success is associated with the adoption of the model suggesting governance structure and the accurate ex-ante assessment of model variables. The four cases are: C210/C215 JV, C260/270 JV, C291/296 JV, and C295 JV. Moreover, the proposed model is further supported by three other cases demonstrating that the governance structure of a JV may evolve to the other type or the JV may dissolve early, if the ex-post conditions of proposed determinants significantly deviate from their ex-ante evaluation. Specifically, the governance structures of C250 and C280 were adjusted to the other type shortly after the construction, and the C230/240 JV dissolved early. As a result, the proposed model could be supported by the falsification of the rival hypothesis that the conditions of governance structure determinants do not have significant influence on optimal governance structure. That is, because of the evolution of governance structures or JV status in response to the ex-post conditions of determinants and because of the better results due to such evolution, the rival hypothesis cannot hold. The last case, C220 JV, cannot show the connection between governance structure choice and JV success since the bankruptcy of the local partners in this JV was not caused by the governance of this JV. Therefore, considering the overall evidence summarized above, we conclude that the proposed model for governance structure choice in CJVs is reasonably supported by this multiple-case study. Note that although there are only eight cases, the supporting power of the multiple-case studies follows the "repli-

cation logic," i.e., the replications of causal relations from cases, instead of "sampling logic" (Yin 2003). Importantly, there are four cases together demonstrating literal replication, with three other cases showing the falsification of the rival hypothesis against the model. Overall, theoretic replication that reasonably supports the model is established.

Conclusions and Limitations

The ability to make proper decisions for CJVs is critical to the success of JVs and their participating firms. Importantly, the coordination and organizational control are most challenging in managing JVs. This study aims to investigate the choice of organizational design and why such design can result in better JV management.

In this paper, we identify two types of governance structures in managing CJVs, develop a model for the choice of governance structure in CJVs, and empirically evaluate the model through multiple-case studies. In theory development, we combine CBP and RBV as two complementary theoretical perspectives to build an integrated model for the choice of governance structure, expressed as a set of propositions. According to the propositions, the governance choice of CJVs is contingent upon four major factors. On one hand, from the CBP, we show that "corporate cultural difference" and "trust" are two major determinants of governance structures and it is hypothesized that a lower level of corporate cultural difference and higher level of trust will favor the use of the JMJ structure, whereas a higher level of corporate cultural difference and lower level of trust will favor the use of SMJ. On the other hand, from the RBV perspective "needs for procurement autonomy" and "motivation for learning," are identified as the other two major determinants of governance structures and it is hypothesized that a lower level of needs for procurement autonomy and higher level of motivation for learning will favor the use of JMJ, whereas a higher level of needs for procurement autonomy and lower level of motivation for learning will favor the use of SMJ.

A study of multiple cases in the THSR project was conducted to evaluate the proposed model. Using case study as a research methodology, we take the view that case study is an empirical inquiry and a research methodology. Through the study of eight CJVs in THSR project, these cases replicate the linkage between the hypothesized determinants and governance structure choices and reasonably support the proposed model.

Some limitations deserve discussions and call for future research. First, through literature review and case studies, this paper aims to provide a parsimonious conceptual framework that helps analyze the governance structure choice of CJVs. However, this paper is unable to cover all possible theoretical perspectives or determining variables. Future research can incorporate more theoretical backgrounds to develop a more comprehensive model. Second, to evaluate the proposed model, this study adopts a qualitative research method and measurement of the contingency variables unavoidably relied on researchers' interpretation of the interview data. Subjectivity might be involved, and particularly, our judgment toward each JV might not be completely correct. Finally, the case study performed can only partially support the proposed model. This paper is not able to provide statistical evidence to statistically test the model. Future research may consider conducting large-sample quantitative analysis to verify the model.

This pilot study contributes to the literature in several ways. First, we identify and clarify the different control-focused governance structures in CJVs, namely, SMJ and JMJ. Second, the study develops a model that unifies the strengths of two important schools of theory for the choice of governance structure in CJVs. This study also contributes to construction practice by providing a new perspective and guidance for better JV governance and performance.

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References

Badger, W. W., and Mulligan, D. E. (1995). "Rationale and benefits associated with international alliances." *J. Constr. Eng. Manage.*, 121(1), 100–111.

Buckley, P. J., and Casson, M. (1996). "An economic model of international joint venture strategy." *J. Int. Business Stud.*, 27(5), 849–876.

Chen, C. (2005). "Entry strategies for international construction markets." Doctoral dissertation, Pennsylvania State Univ., University Park, Pa.

Cheng, E. W. L., Li, H., Love, P. E. D., and Irani, Z. (2004). "Strategic alliances: A model for establishing long-term commitment to interorganizational relations in construction." *Build. Environ.*, 39(4), 459–468.

Daft, R. L. (2001). *Organization theory and design*, 7th Ed., South-Western College, Cincinnati.

Das, T. K., and Teng, B. S. (2000). "A resource-based theory of strategic alliances." *J. Manage.*, 26(1), 31–61.

DiMaggio, P. J., and Powell, W. W. (1983). "The iron cage revisited—Institutional isomorphism and collective rationality in organizational fields." *Am. Sociol. Rev.*, 48(2), 147–160.

Doz, Y. L. (1996). "The evolution of cooperation in strategic alliances: Initial conditions or learning processes?" *Strategic Manage. J.*, 17, 55–83.

Dyer, J. H., and Chu, W. J. (2003). "The role of trustworthiness in reducing transaction costs and improving performance: Empirical evidence from the United States, Japan, and Korea." *Org. Sci.*, 14(1), 57–68.

Eisenhardt, K. M. (1989). "Building theories from case-study research." *Acad. Manage. Rev.*, 14(4), 532–550.

Flyvbjerg, B. (2006). "Five misunderstandings about case-study research." *Qualitative Inquiry*, 12(2), 219–245.

GarciaCanal, E. (1996). "Contractual form in domestic and international strategic alliances." *Organ. Stud.*, 17(5), 773–794.

Geringer, J. M., and Hebert, L. (1989). "Control and performance of international joint ventures." *J. Int. Business Stud.*, 20(2), 235–254.

Ghoshal, S., and Moran, P. (1996). "Bad for practice: A critique of the transaction cost theory." *Acad. Manage. Rev.*, 21(1), 13–47.

Grant, R. M. (1996). "Toward a knowledge-based theory of the firm." *Strategic Manage. J.*, 17, 109–122.

Gulati, R. (1995). "Social structure and alliance formation patterns: A longitudinal analysis." *Adm. Sci. Q.*, 40(4), 619–652.

Gulati, R., and Singh, H. (1998). "The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances." *Adm. Sci. Q.*, 43(4), 781–814.

Hamel, G. (1991). "Competition for competence and inter-partner learning within international strategic alliances." *Strategic Manage. J.*, 12, 83–103.

Hamel, G., Doz, Y. L., and Prahalad, C. K. (1989). "Collaborate with your competitors—And win." *Harvard Bus. Rev.*, 67(1), 133–139.

Harrigan, K. R. (1985). "Strategies for intrafirm transfers and outside sourcing." *Acad. Manage J.*, 28(4), 914–925.

Hennart, J. F. (1988). "A transaction costs theory of equity joint ventures." *Strategic Manage. J.*, 9(4), 361–374.
Horii, T., Jin, Y., and Levitt, R. E. (2004). "Modeling and analyzing cultural influences on project team performance." *Comput. Math. Org. Theory*, 10(4), 305–321.
Inkpen, A. C., and Crossan, M. M. (1995). "Believing is seeing—Joint ventures and organization learning." *J. Manage. Stud. (Oxford)*, 32(5), 595–618.
Khanna, T., Gulati, R., and Nohria, N. (1998). "The dynamics of learning alliances: Competition, cooperation, and relative scope." *Strategic Manage. J.*, 19(3), 193–210.
Kogut, B. (1988). "Joint ventures—Theoretical and empirical-perspectives." *Strategic Manage. J.*, 9(4), 319–332.
Luo, J. (2001). "Assessing management and performance of Sino-foreign construction joint ventures." *Constr. Manage. Econom.*, 19(1), 109–117.
Mahalingam, A., and Levitt, R. E. (2007). "Institutional theory as a framework for analyzing conflicts on global projects." *J. Constr. Eng. Manage.*, 133(7), 517–527.
Matthews, R. C. O. (1986). "The economics of institutions and the sources of growth." *Econom. J.*, 96(384), 903–918.
Meschi, P. X. (1997). "Longevity and cultural differences of international joint ventures: Toward time-based cultural management." *Hum. Relat.*, 50(2), 211–228.
Mjoen, H., and Tallman, S. (1997). "Control and performance in international joint ventures." *Org. Sci.*, 8(3), 257–274.
Mohamed, S. (2003). "Performance in international construction joint ventures: Modeling perspective." *J. Constr. Eng. Manage.*, 129(6), 619–626.
Mohr, J., and Spekman, R. (1994). "Characteristics of partnership success, partnership attributes, communication behavior, and conflict-resolution techniques." *Strategic Manage. J.*, 15(2), 135–152.
Morris, J. M. (1998). *Joint ventures: Business strategies for accountants*, 2nd Ed., Wiley, New York.
Mowery, D. C., Oxley, J. E., and Silverman, B. S. (1998). "Technological overlap and interfirm cooperation: Implications for the resource-based view of the firm." *Res. Policy*, 27(5), 507–523.
Naylor, J., and Lewis, M. (1997). "Internal alliances: Using joint ventures in a diversified company." *J. Plant Nutrition*, 30(5), 678–688.
Ngowi, A. B. (2007). "The role of trustworthiness in the formation and governance of construction alliances." *Build. Environ.*, 42(4), 1828–1835.
Oxley, J. E. (1997). "Appropriability hazards and governance in strategic alliances: A transaction cost approach." *J. Econ. Behav. Organ.*, 13(2), 387–409.
Oxley, J. E. (1999). "Institutional environment and the mechanisms of governance: The impact of intellectual property protection on the structure of inter-firm alliances." *J. Econ. Behav. Organ.*, 38(3), 283–309.
Ozorhon, B., Arditi, D., Dikmen, I., and Birgonul, M. T. (2008). "Effect of partner fit in international construction joint ventures." *J. Manage. Eng.*, 24(1), 12–20.
Ozorhon, B., Dikmen, I., and Birgonul, M. T. (2007). "Using analytic network process to predict the performance of international construction joint ventures." *J. Manage. Eng.*, 23(3), 156–163.
Pangarkar, N., and Klein, S. (2001). "The impacts of alliance purpose and partner similarity on alliance governance." *Brit. J. Manage.*, 12(4), 341–353.
Park, S. H., and Ungson, G. R. (1997). "The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution." *Acad. Manage J.*, 40(2), 279–307.
Parkhe, A. (1993). "Strategic alliance structuring—A game-theoretic and transaction cost examination of interfirm cooperation." *Acad. Manage J.*, 36(4), 794–829.
Peng, M. W. (2001). "The resource-based view and international business." *J. Manage.*, 27(6), 803–829.
Pisano, G. P. (1989). "Using equity participation to support exchange—Evidence from the biotechnology industry." *J. Law Econ. Organ.*, 5(1), 109–126.
Pisano, G. P., Russo, M. V., and Teece, D. (1988). *Joint ventures and collaborative arrangements in the telecommunications equipment industry*, Cambridge, Mass.
Powell, W. W. (1990). "Neither market nor hierarchy—Network forms of organization." *Res. Organ. Behav.*, 12, 295–336.
Ramos-Rodriguez, A., and Ruiz-Navarro, J. (2004). "Changes in the intellectual structure of strategic management research: A bibliometric study of the strategic management journal, 1980–2000." *Strategic Manage. J.*, 25(10), 981–1004.
Rousseau, D. M., Sitkin, S. B., Burt, R. S., and Camerer, C. (1998). "Not so different after all: A cross-discipline view of trust." *Acad. Manage. Rev.*, 23(3), 393–404.
Salk, J. E., and Shenkar, O. (2001). "Social identities in an international joint venture: An exploratory case study." *Org. Sci.*, 12(2), 161–178.
Scott, W. R. (2001). *Institutions and organizations*, 2nd Ed., Sage, Thousand Oaks, Calif.
Sengupta, S., and Perry, M. (1997). "Some antecedents of global strategic alliance formation." *J. Int. Mark.*, 5(1), 31–50.
Sheppard, B. H., and Sherman, D. M. (1998). "The grammars of trust: A model and general implications." *Acad. Manage. Rev.*, 23(3), 422–437.
Sillars, D. N., and Kangari, R. (1997). "Japanese construction alliances." *J. Constr. Eng. Manage.*, 123(2), 146–152.
Sillars, D. N., and Kangari, R. (2004). "Predicting organizational success within a project-based joint venture alliance." *J. Constr. Eng. Manage.*, 130(4), 500–508.
Ulrich, D., and Lake, D. (1991). "Organizational capability: Creating competitive advantage." *Acad. Manage. Exec.*, 5(1), 77–92.
Warszawski, A. (1996). "Strategic planning in construction companies." *J. Constr. Eng. Manage.*, 122(2), 133–140.
Wernerfelt, B. (1984). "A resource-based view of the firm." *Strategic Manage. J.*, 5(2), 171–180.
Williamson, O. E. (1975). *Markets and hierarchies, analysis and antitrust implications: A study in the economics of internal organization*, Free Press, New York.
Williamson, O. E. (1979). "Transaction-cost economics: The governance of contractual relations." *J. Law Econom.*, 22(2), 233–261.
Williamson, O. E. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting*, Free Press, New York.
Yin, R. K. (2003). *Case study research: Design and methods*, 3rd Ed., Sage, Newbury Park, Calif.
Yin, X. L., and Zajac, E. J. (2004). "The strategy/governance structure fit relationship: Theory and evidence in franchising arrangements." *Strategic Manage. J.*, 25(4), 365–383.
Zaheer, A., McEvily, B., and Perrone, V. (1998). "Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance." *Org. Sci.*, 9(2), 141–159.