Risk Sharing And It's Management In Construction Industry

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Abstract— Joint ventures has come up a popular art of planning in an environment in which fast access to up to dated technology and emerging markets is more critical than ever before. Joint ventures are nowadays mainly used in construction projects as one important co-operation way between contractors. Risk sharing and its management play a vital role in any construction project in order to succeed thru joint venture. Joint venturing usually allows participating companies to rapidly change scope of their business. However joint venture is a risky business. The construction industry itself is associated with high degree of risk in the nature of its business activities, operational environmental and organization. Normally success of any construction project depends upon the results it is supposed to achieve. But again it would be responsibility of participating firms to manage risks that confront their project. The factors crucial to joint venture success are agreement of the contract, partner selection, negotiations, training/ equity etc.

The literatures focusing about risk sharing when there are multi-risks are hardly available. The purpose of thesis is to find when there are multiple risks under which conditions partner will prefer joint ventures to undertake whole project themselves. It is observed that background risk partners can improve their certainty equivalent values by setting up a joint venture instead of taking whole project by one contractor. If companies forming joint venture undertake limited liabilities could face another risk called as partner risk. Joint ventures could be set up successfully between partners who are different on at least one of the following characteristics. I.e. capacities to deal with risk and different degrees of risk aversion.

An analysis of risks is necessary in order to have efficient joint venture agreement. Joint ventures are mainly classified into two types according to management style:

- Sponsor style
- Partner style

The sponsor style joint venture is based on mutual trust between partners. It is more efficient than partner style joint venture in which partners are treated equal. A model is built to analyze how to share risks between partners in joint venture where multiple risks are present. While signing joint venture usually bargaining is carried out to set portfolios of individual partners. Result of bargaining must be Pareto optimum. Joint ventures are not perfect co-operation ways. They also create some problems while they resolve some problems. Still they are widely used. If partners can share all the cost of dealings with risks, risk can be shared between partners without moral hazard problem.

Keywords: Risk sharing, risk management, joint venture

INTRODUCTION

1.1 Introduction:

A joint venture is a systematic procedure used to respond to specific business phenomena such as specific government policy, access to new markets, technology transfer or economies of scale business capacity. An international joint venture is a separate legal organizational entity representing the partial holdings of two or more parent firms, in which the headquarters of at least one is located outside the country of operation of the joint venture. The feasibility and the desirability of a joint venture must be assembled by careful analysis of the economic, political, social and cultural environment within which the venture will be implemented and managed. A planned approach necessitates a thorough and careful evaluation of these aspects by both partners to ensure successful implementation. Risk management techniques are not so well developed in the construction industry and there is a need to develop proven techniques, rather than rely on intuitive methods.

Joint ventures are not only used in manufacturing industry, but also in R & D projects and other industries including construction industry. The increasing magnitudes, complexities, and risks associated with major construction projects have brought together organizations with diverse strengths and weaknesses to form joint ventures to collectively bid for, and to execute projects. Construction organizations have extensively used international joint ventures as a vehicle to enter new construction markets around the world. The number of international construction joint ventures is growing worldwide at an increasing pace, especially in developing countries (Lim et al., 2001[80]). Developing countries see international construction joint ventures as one of the best instruments for meeting the competing interests of national development and the prevention of the domination of the economy by foreign investors.

Alchian argued that a joint venture is an efficient organizational device because it avoids the opportunity for expropria-

tion which would result if only one party owned the resource and sold its services to the other. Johnson et al. (2000) argued vertical joint ventures are quasi-market, quasi-hierarchy transaction structures that allow unrelated parts of the firms to a unified structure. Thus, joint ventures can efficiently resolve governance problems that would be too great in arm's-length market transactions, while avoiding the problems associated with combining all of the firms' activities in a hierarchical structure. On the other hand, joint ventures would face some special problems because in the joint ventures partners come from different companies they have different objectives while they share some same objectives. The conflicts of the partners' own objectives can cause many problems, because in the joint venture partners share not only the fruits of their cooperation but also share the control process. During the course of their controlling process the balance of the objectives may become an important problem. The distributions of control rights will affect the importance of each partner's objective and also affect the achievement of each objective. All these conflicts would cause the problem which is called high failure rate of joint ventures.

1.2 Definition of Joint Ventures

There are many definitions of joint ventures, each of which describes some features of joint ventures. Some definitions define a broad range of cooperation as joint ventures; while some others define a narrow range of cooperation as joint ventures. The most representative two are the definitions defined by Lynch and Norwood. A joint venture can be defined as a cooperative business activity formed by two or more separate organizations that creates an independent business entity and allocates ownership, operational responsibilities, and financial risks and rewards to each member, while preserving their separate identity/autonomy. Norwood defined joint ventures as the commercial agreements between two or more companies in order to allow greater ease of work and cooperation towards achieving a common aim, through the manipulation of the appropriate resources. Other definitions are almost same as the two definitions mentioned above. Such as, Johnson defined joint ventures as the separate entities owned jointly by two or more firms that represent a partial combination of their resources. His definition is almost same as the one defined by Harrigan, joint ventures involve two or more legally distinct organizations, each of which invests in the ventures and actively participates in the decision-making activities of the jointly owned entity.

The definitions can classified into two groups: one group defines joint ventures as a separate entity created by two or more than two partners who bring together their resources and share the control right and profits; the other group defines joint ventures as any cooperation between two or more than two companies. Just as Hennart summarized joint ventures can be distinguished into equity joint ventures and non-equity joint ventures. Equity joint ventures arise whenever two or more sponsors bring given assets to an independent legal entity and are paid for some or all of their contributions from the profits earned by the entity, or when a firm acquires partial ownership of another firm. The non-equity joint ventures describe a wide array of contractual arrangements, such as licensing, distribution and supply agreements, or technical assistance and management contacts.

An international joint venture is a joint venture in which at least one parent is head- quartered outside the venture's country of operation or if the joint venture has a significant level of operation in more than one country.

In a narrow sense, a joint venture is defined as: two or more parties (they may be individuals, companies, corporation, or others) combine their resources to create a new company to carry out a special transaction/project according to their agreement. They will share the ownership, operational responsibilities, and the profits and the losses of the new company, and the new company as a separate entity undertakes liability for the debts and the third parties.

1.3 Industries Characteristics and Joint Ventures

Many researchers did research on the relation between industries and joint ventures, and they tried to find in which industry joint ventures are always chosen as the cooperation ways. Kogut found a high percentage of joint ventures in the manufacturing industry than the rest; Berg found joint ventures was predominant in some industries such as mining, petroleum refining and basic chemicals, and low in textiles, paint and agriculture chemicals, and specialty non-electric machinery. Additionally some researchers tried to find the characteristics of the industry in which joint ventures are always used as cooperation means. Pfeffer found transaction frequency and technology of the venture industry were significantly related to joint venture incidence. They found a high exchange of sales and purchase transactions, and which are technology- intensive, tend to have more joint ventures. There are also researches about whether parent companies of the partners are the same or not. Duncan found that joint ventures are always used by the parents companies from different industries; while Hennart found Japanese investors tend to joint venture with U.S. partners which manufacture the same produces. Some other researches tried to find the factors which affect the parent companies' choice of cooperation means. The factors can be summarized from the empirical studies results. The characteristic of the targeted assets is a main factor which affects the choice of the parent companies. Hennart found if the targeted assets are firm-specific or if the assets are public goods, joint ventures will always be used by the parent companies to achieve the access of the assets.

From the previous literatures, joint ventures are more popular in some industries comparing with others can be found. The characteristics of industries and transactions affect the use of joint ventures by the parent companies.

1.4 Construction and Manufacturing Industries

Most of the researches focus on manufacturing industry joint ventures. Construction industry is different from manufacturing industry. The difference between the manufacturing

industry and the construction industry will affect the characteristics of the joint ventures in these industries. To understand the construction joint venture, it is necessary to understand what the difference between the construction joint venture and the manufacturing joint venture is. To understand the difference between the joint ventures in these two industries, at first the difference between the two industries should be clarified. Till now there are no researches focus on the differences between these two industries.

1.4.1 Output of the Two Industries

The uniqueness of the output is one of the main differences between these two in- dustries. Construction output is the result of a project production system in which the product is adapted to particular buyers, locations and uses. This uniqueness of the output discourages the use of project-specialized assets, unlike manufacturing industries which produce mass products. Almost all the works in the manufacturing are standardized; it can be undertaken on the standard procedure. Because of the uniqueness, the construction projects are different with each other so it is very difficult to standardize the work. Even the procedures can be standardized, however because of the uncertainties related with weather and natural conditions, some measures has to be undertaken to deal with the difference between the standard and the real condition. Construction industry includes a wide variety of final products, from small domestic alterations to huge industrial plant, and each one involves a different mixture of heterogeneous activities. So when a firm starts out on a new product, it has to integrate dissimilar intermediate activities. Thus the activities that construction firms carry out are heterogeneous not only in type but also in geographical location. The uniqueness of the output in construction industry makes management very complex as compared with manufacturing industry. It also makes the related parties face more risks or uncertainties.

1.4.2 Immobility of the Intermediate and Final Product

Immobility of the intermediate product and final product is also different in these two industries. Construction consists of building immobile structure in a certain location and most of the transformations needed take place on site. Productive assets are, therefore, moved to the product and not the other way the products moved around as in manu- facturing. Each new project, therefore, demands a new working center. As we all know that in manufacturing industry all the intermediate product move along the product line. In construction industry the intermediate product is immobile, so the plant and workers have to move along the intermediate product. The immobility of the product makes it different in the organizations of the company in two industries. Immobility and unique- ness of the construction output also lead construction firms to establish a dual structure. Construction firms have a central unit, which includes the main activities subject to scale economies, and several working centers located where the different projects are being carried out. It makes management very complex.

1.4.3 Uncertainties

Except for the uncertainties about market which is the same as the manufacturing industry. The site based nature of production makes it highly prone to uncertainties in climate and site conditions, and availability of resources in the local environment where the project is carried out While in manufacturing industry the uncertainties about climate and site condition almost do not affect the produce process. When the construction project is huge and complex, it is very difficult for only one company to finish the project not only due to problem of financial but also due to technologies needed to manage and construct. So cooperation between the contractors are normal. However, during the course of construction, there is a potential conflict among the parties due to their different interests and objectives. High uncertainties and co- operation between the contractors make the management more complex in construction industry.

1.4.4 Technology Level

The measures which be used to measure the technology level include the degree of product standardization, the extent of substitution of on-site processes by off-site production and the degree of mechanization in the construction process, as well as the degree of the produce process programmed. If the product can be standard- ized or if there are some substitutions of on-site processes by off-site production or if the degree of mechanization is high or the produce process can be programmed, it means low technology level. According to the measures the conclusion similar to the one mentioned by Ball can be obtained. Ball argued that the production process in the con- struction industry is also characterized by the use of relatively low technology and high intensity of labor. With the development of economics more high technology structures are needed. Correspondingly high technology will be needed. From the whole market of construction industry, construction industry is found to be an industry with low technol- ogy level . Because of the complexity of the modern structure, it is useful to distinguish two different technological stages in which firms specialize. One focuses on project design and technical management and the other concentrates on project implementation. Each stage requires different capabilities. Design and management are carried out by qualified technical teams having design, supervisory and problem-solving capabilities that enable them to make competitive bids for all kinds of contracts. This kind of firms is high technology level. It is necessary to catch up the innovation of the technology of equipments. Implementation activities, on the other hand, require cost control, operative capabilities and knowledge of local labor markets, i.e., opportunity wages, suitable incentive systems, and precise screening mechanisms. These teams are based on blue-collar workers, mainly craftsman and unskilled laborers, whose purpose is to accurately implement any project. This kind of works can be finished by

the one who only has lower technology level. While in manufacturing industry, because of high innovation speed, the technology level will be higher compared with the construction industry.

	Content	Manufacturing indus-	Construction industry
1	Specific	High asset specific High human specific	Low asset specific Low human specific
2	Uniqueness	Low uniqueness, mass manufacturing	high, for one site for one client
3	Technology	High technology Intensive	Low technology Intensive
4	Intermediate prod- uct	Move along produce line	Material and others move along intermediate pro-
5	Uncertainty during the period of prod-	Low level	High level
6	Period	Long time	Limited time
7	Complexity of the	Low level	High level

1.4.5 Customer Satisfaction

A final special feature of the construction industry is the relative value of each unit of product. Each project or contract usually represents an important percentage of the transactors' operations. This happens not only in civil engineering, where all projects are large, but also in residential building. In the latter, projects may be of minor economic importance but firms are also smaller in size, so each project again constitutes a substantial percentage of overall sales. Therefore the conclusion that the demand for construction firms is of quite a discrete nature can be obtained. The quality of each product will affect the reputation of the contractor. In manufacturing industry, it is very easy to change the product with fault without incurring much cost. While in construction industry it is impossible or very costly to change the product with fault. If there is some fault it will take the contractor more to recover in construction industry than in manufacturing industry. Customer satisfaction term is very different from one owner to the other in construction industry; while it is almost the same for all customers in manufacturing industry. This difference will cause more uncertainties related to customer satisfaction in construction industry.

1.4.6 Asset Specific Level

Immobility and uniqueness of the outputs affect the importance of different sources of asset specificity. First, site specificity is not important because construction assets are mobile and relocating them is relatively inexpensive. Second, physical specificity will depend on the type of construction because the productive assets are usually designed for a particular kind of works or products and not for a particular project. Physical specificity will be directly related to the demands in the market, as well as the number of firms that use the assets. In manufacturing industry the asset specific level will be higher than that in construction industry. It is because the machinery is designed for only one type of product and not for some type of work like the one in construction industry.

The differences between manufacturing industry and construction industry can be summarized as table 1.1.

Table 1.1: The Difference Between Maufacturing Industry and Construction Industry

From the Table 1.1, the results that construction industry is very different from manufacturing industry can be obtained. Construction industry is more complex, riskier, and less specific, and has a longer period and lower technology level compared with manufacturing industry. Such difference between the two industries results in the difference of their joint ventures. The characteristics of construction industry such as more complexity and more risks will make it more difficult and more complex to define responsibilities of the partners, thus make it more difficult to share control right and to make decisions. The characteristic of high uniqueness of the construction will make it very difficult for the contractor to use their experience gained from this project on that project. Under this condition, the contractor will have to face new problems when they undertake a new project. While lower technology level and lower specific characteristic of construction industry will decrease the hold up problem or moral hazard problem in cooperation.

1.5 Joint Ventures and Efficiency

Joint ventures are not perfect cooperation ways. They also create some problems while they resolve some problems. One of the main problem is inefficiency. Because the partners in joint ventures are from different companies, they are always motivated by different objectives to cooperate with each other. Under some conditions they may even compete with each other while they cooperate with each other. Therefore joint ventures are also regarded as inefficient organization structures just be- cause the partners share not only profits and losses, but also control right and ownership. The sharing characteristics of joint ventures make it very difficult to achieve efficiency be- cause the partners can not get enough information about other partners' actions. Under this condition there is a high possibility to cause such problem as moral hazard problems and adverse selection problems. Under some conditions these problems can be resolved But it is constrained to some special conditions. In this thesis the efficiency of the construction joint venture agreements when there is a risk is analyzed. A way in which partners can share their risks without losing efficiency is also introduced.

Joint ventures are not efficient cooperation ways, though they are used very widely. Why joint ventures are used so widely could be explained from the viewpoint of in- formation asymmetry. The view of information asymmetry argues that the existing of asymmetric information makes the failure of the market transaction, at the same time it also makes acquisition more risky. In the market transaction, asymmetric information will bring more transaction cost, and further higher transaction cost will decrease the market transaction while in joint ventures partners can access the

information which can not be obtained in market transaction. Then the inefficiency of market transactions will be decreased to some degree which is lower than the one in the market transactions. About acquisition, asymmetric information will make it impossible for the transaction partners to agree with each other on the price of the assets, then it will make acquisition fail. When there are risks or uncertainty, bilateral contract will be inefficient, and acquisition will also be inefficient. Under this condition, joint ventures will be used to decrease the inefficiency of the market transactions or acquisitions due to the inaccessability of the information. Construction industry is an industry which is much riskier than other industries. In construction industry, joint ventures are used to access special materials, specialists or technologies to share risks. How to share risks between partners becomes an important problem the partners have to face, especially when both partners undertake only limited liabilities. Limited liabil- ities will change the behaviors of decision-maker. When both partners have the limited liability, under which conditions they will choose joint ventures as their cooperation way should be clarified.

1.6 Joint Ventures and Limited Liability

Here a joint venture is defined as the new entity created by two or more parties (they may be individuals, companies, corporation, or others) by combining their resources to carry out a special transaction/project according to their agreement. The legal character of the new company depends on the laws of the countries where the joint ventures are set up. The normal structures are: limited liability company and unlimited liability company. Limited liability is used to permit the company to choose some risky investment because limited liability can make sure the owner of the company free from losses more than the amount of his limited liability. Under this condition, the company may act as the one who is less risk-averse or even risk-loving. The partners in the joint ventures undertake joint liability to the client. Limited liability is a very important factor for a company to consider when he makes decisions to choose his potential cooperators in the joint venture for a project.
The liability capacities of the partner will affect his attitude towards risks. The lower the decision-maker's liability capacity is, the more possible for him to choose higher risky project. It is the same in the joint venture, the lower the limited liability of a partner is,

Table 1.2: The Risks Analyzed in Each Chapter

Chapter	Risks
3	A background risk and project risks
4	Partner risks and project risks
5	Project time limit extension
6	Controllable risks and uncontrollable risks

the more risks the other partners will face because of the characteristic of joint liability of joint ventures. Limited-liability makes the decision makers free from high loss and makes the decision-makers take more opportunism action. It is necessary to analyze how to choose limited liability cooperators when there are many risks.

1.7 The Structure of This Thesis

Joint ventures increased very quickly in the past 20 years. Joint ventures are by far one of the most popular forms of cooperation. There are many re- searches about joint ventures recently, they spans several disciplines including finance, industrial organization, organization theory, and business policy. They focus on the following topics: the motivations of joint ventures, partner selection, the management of joint ventures and so on. Almost no literatures focus on risk-sharing problem in joint ventures. Construction industry is known as an industry with many risks. The previous literatures about construction joint ventures focus on risk identification in the joint venture, and many classifications are summarized. In this thesis, two kinds of classifications of risks are used here. The first one is background risks, partner risks and project risks; the second one is controllable risks and uncontrollable risks.

2.1 Characteristics of Joint Ventures

The number of alliances increased dramatically during the past two decades (Insead,2004[109]). Joint ventures are one of the main alliance structures. Just as many re- searchers argued alliance (joint ventures) failure rate is in the 30-70 percent range. Previous literatures explained the reasons of high failure rate as: joint venture encompasses the competitive relationships between the parent companies and the organizational structure of the joint venture; the ownership structure of the joint ventures and joint ventures are used as transitional organizational forms. It is the characteristics of the joint ventures that cause more problems to manage or to monitor and high failure rate. The main characteristics of joint ventures can be summarized as:

2.1.1 Sharing Rights between the Partners

Joint ventures are defined the new companies created by two or more parties (they may be individuals, companies, or others) who combine their resources to carry out a special transaction/project according to their agreement. They will share the ownership, operational responsibilities, the control right, the profits and the losses of the new company, and the new company as a separate entity undertakes liability for the debts and the third parties. The characteristic that the partners in the joint venture share not only risks and profits but also control right makes it very difficult to manage and bring many conflicts during the operation of the joint venture. To which degree that each partner can achieve his goals depends on the shares of each partner in the joint venture. The partners define how to share the risks, the profit and control

right by negotiating with each other. The result of the negotiation depends on the relative bargaining power of the partners.

2.1.2 Relations between the Partners

Because a joint venture is created by two or more than two companies, these companies cooperate with each other, at the same time they compete with each other. They cooperate with each other to achieve certain goals that neither partner can achieve on their own. On the other hand, the difference of their own goals or their own self-interest will make them to compete with each other. The two kinds of relations between the joint venture partners is also called as 'cooperative dilemma' or 'joint venture dilemma'. Many researchers have used 'prisoners' dilemma' to model cooperative and competitive behavior in both economics and psychology. Because the characteristics of the special relations between the partners in the joint venture, it also brings some special problems. Instability or high failure rate is one of the most important problems.

2.2 Joint Venture in Construction Industry

2.2.1 Motivation of Joint Ventures

A joint ventures is always used as an important means to cooperate by contractors in construction industry. About the motivations of using joint ventures in construction industry there are many arguments. For example, In Japan, construction joint ventures are used to improve their chance of getting project by small and medium-size companies. In China, construction joint ventures are used by foreign companies to avoid the government policy. Just as in manufacturing industry, joint ventures are also used to avoid the policy of the country, to expand market, to share risks, to decrease cost or access cheaper materials and resources and to transfer technology in construction industry. The motivations of forming construction joint ventures are summarized by Norwood et al as the Table 2.1. The motivations are almost the same as the motivations of joint ventures in other industries. They can also be explained by the theories which are used to explain the motivations of joint ventures as we summarized in Section (2.1).

2.2.2 Types of Joint Venture in Construction Industry

Joint ventures can be classified according to different focuses. The classifications of joint venture which are always used in construction are:

1) The integrated type and non-integrated

According to different forms of sharing or undertaking works, construction joint ven- tures fall broadly into two categories: integrated and non-integrated (separated type). In

Table 2.1: Motives for Forming Construction Joint Venture (Norwood, 1999[96])

1	To participate in overseas project or to undertake the major project
2	To expand market
3	To spread financial risk
4	To decrease cost by access the cheaper manpower, materials and resources
5	To bring in outside expertise/technology
6	To learn management skills
7	To avoid government policy about foreign investment constraints

the case of non-integrated joint venture, the overall responsibility for the contract usually has to be negotiated by a joint venture board. Separate sections of the work are then subcontracted out, with each of the partners taking over the responsibility for running their own technical and administrative elements of work.

2) The project-based type and traditional type

According to the objective of the joint ventures, construction joint ventures can be classified as project-based joint ventures and traditional type. Project-based joint ventures represent a particularly interesting group of joint ventures, which are different from the traditional joint ventures. The differences are wide-ranging, from the limited life span of the venture, the planning horizons, through the decision making and management style, the space of required information flow to the potential benefits of the two different types of venture. Table (2.2) provides a summary about the specificity of project-based joint ventures. First, project-based joint ventures have a predetermined, limited life span. Their activities are oriented towards well-defined objectives. These joint ventures are terminated upon the completion of the given project. In the construction field, many joint ventures are project-based joint ventures. Traditional joint ventures are also used to maintain the cooperation relations between the partners for long-term.

2.3 Joint Venture and Subcontracting

Subcontracting is a traditional cooperation means in construction industry. With the globalization of the economy, joint ventures occur and become an important cooperation means in many industries including construction industry. Now joint ventures and sub- contracting are the two main cooperation means in construction industry. To understand

Table 2.2: Comparison of Project-based and Traditional Joint Ventures (JVs)

	Contents	Project-based JVs	Traditional JVs
1	Life span	Finite	Indefinite
2	Strategy planning	Short-term orientation	Long-term orientation
3	Nature	Dissolving after project Completing	On-going
4	Time to rectify default	Within contract period	On-going process
5	Decision making	Relatively fast	Relatively slow
6	Management style	Task oriented	Business orientation
7	Partner relationship	Short-term orientation	Long-term orientation
8	Information flow requirement	Must be quick	On-going process
9	Product/service Improvement	Define by contract	On-going process
10	Control	Hierarchy	Team work
11	Primary objective	Completion of project on Time	Business objectives
12	Potential benefits	Possible win-lose situation	Win-win situation

construction joint ventures, we have to know the differences between construction joint ventures and subcontracting.

2.3.1. Joint Venture in Construction Industry

Badger looked construction joint ventures as one of the many forms of strategic alliances, set-up to allow companies from all industrial sectors, to compete within the global economy. Here we define that when the two or more companies bring their assets together and set up a new company (entity) as a joint venture, we exclude the non-equity (contractual) joint ventures. Joint venture organizations can be viewed as hierarchical structures. The partners in the joint ventures monitor or manage their relations by hierarchical orders; even they also have agreement between the partners. The agreement between the partners only defines the structure of the joint venture, not details about management. All the details (the process) of the construction are managed or monitored by the hierarchical organization set up by the partners.

Norwood summarized in the construction industry the reasons forming

joint venture agreements. The reasons are: (1) an increase in the credibility of a prequali- fication or bid by two or more companies; (2) reduction of exposure on very large projects to more manageable proportions; (3) combination of general resources; (4) combination of specialist skills; (5) requirements for local participation. About the motivation of forming the joint venture in construction industry they summarized as: (1) to participate in over- seas projects; (2) to maintain an overseas presence particularly when the market was low; (3) to spread financial risk; (4) to bring in outside expertise; (5) to make use of existing geographical or regional base; (6) to access greater manpower from local partner. We can find the motivations of construction joint ventures are almost the same as the one in other industries. They are also different from the motivations of subcontracting.

Table 2.3: The Difference between JVs and Subcontracting

	Content	Subcontracting	Joint Venture
1	Responsibility	General contractor undertakes all the responsibilities for the client, while the subcontractor undertakes responsibilities for the general contractor	The partners undertake The responsibilities to the client jointly
2	Risk	Transfer the risk to the Subcontrac- tor	Share between the partners
3	Control	Control change from process to the result	Share control on the process
4	Conflict resolve	Contract law and court	Hierarchy organization
5	Monitor	Contract	Order or authority

2.3.2. Risk Management and Risk Sharing

Because of the complex nature of construction business activity, process, environment, and organization, the participants are widely exposed to a high degree of risk. Risk management is an important component to make sure the success of the construction project or to make sure the profitability for the contractors. There are many literatures about construction project risk management. The experience of the construction project risk management can also be used to manage risk in construction joint ventures. A joint venture structure is different from the normal firm structure. It will make risk management different with the project risk management in a normal firm.

There are some literatures about risk management in construction joint ventures. Liet al classified the risks related with construction joint ventures as: (1) Internal risks. The internal risk group represents the risks that are unique in a joint venture because different organizations are involved. (2) The project-specific risks. The project- specific risk group refers to unexpected developments during the construction period that lead to time and cost overruns or in shortfalls in performance parameters of the completed project. (3) External risks. The external risk group represents the risks that emanate from the competitive macro-environment that the joint venture operates in. In their research, they identified the critical risk factors and give some suggestions about how to mitigate the risk factors. The strategies includes: suitable partner selection, clear agreement, subcontracting, fair engineering contract (main contract between the joint venture and the client), high efficiency employment, good relationship with related parties, dominant share in control and others. In their works they only pointed out the strategies about how to mitigate the risk factors. They did not do any analysis about how to share the risks efficiently between the partners when the risks can not be transferred. At same time they did not consider the efficiency of their transfer strategies.

Shen et al. (2001[117]) did some case study about construction joint ventures in China, they established a risk signifi-

cant index. They classified the risks related construction joint ventures as: financial risks, legal risks, management risks, market risks, policy and political risks and technical risks. In their research they identified all the risk index related to each classification, and then summarized the critical index in each group. Their research provided some reference to the risk manager. In their research they did not do any analysis about how to manage the risks in the joint venture.

Kapila et al. (2001[66]) focus on how to mitigate financial risks. All the literature about risk management in construction joint ventures focused on some aspects of risk management: risk factors identification, mitigation and so on. It is very important to identify risk factors and to mitigate these factors for the success of the project. It is also very important to define how to share or allocate the risks between the partners. All of these literatures did not focus on the other important aspect of risk management— risk allocation or risk share between the partners. Because of the characteristics of joint ventures, risk management in construction joint ventures will be different from the risk management used by construction companies at some aspects. Just as argued by the literatures about alliance, only second-best result can be gotten in the team work. It is more efficient to allocate risks to different partners clearly in risk management or to define how to share the risks between the partners clearly.

There are many researches about how to allocate risks among all the related participants and they also gave some principals on how to allocate the risks among the participants. Abrahamson has suggested that it is proper for a contracting party to bear risk in any one of the following five cases: If the risk loss is due to his/her own willful misconduct or lack of reasonable efficiency or care; If he can cover a risk by insurance and allow for the convenient and practicable for the risk to be dealt with in this way; if the preponderant economic benefit of running the risk accrues to him; if it is in the interests of efficiency to place the risk on him; if, when the risk eventuates, the loss happens to fall on him in the first instance, and there is no reason under any of the above headings to transfer the loss to another, or it is impracticable to do so. The previous managerial literatures on risk allocation enounce two risk allocation criteria: the risk should be allocated to the party best able to manage it (criterion 1); the risk should be allocated to the least risk-bearing cost partner (criterion 2).

According to the risk allocation principles, risks will be allocated to the more capa- ble partner, under this condition, it will make this partner undertake too many risks. Sometime, it will make this partner default when many risks realize at same time. As a effective risk manager, one can not only consider how to allocate the risks among the participants, under some conditions it is more efficient to share the risks among the part- ners comparing with allocating risks to some participant. Because portfolio effect can be gotten by sharing different risks and can not be gotten by undertaking a risk totally even the expected losses or expected utilities are same. Risk sharing is also an important mechanism to manage risks.

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5. Conclusion

We summarized the theory of motivations of joint ventures. Joint ventures become more and more popular in many fields. It does not mean it is a perfect way of cooperation. Joint ventures do resolve some problems while they also cause some special problems. The characteristics of a joint venture are also summarized, which make it different from the other organization styles. The main characteristics of joint ventures are: the relations between the partners are competition plus cooperation; the second is that the partners should share all things related with joint ventures; the third is that it is an organization style between market and hierarchical organization.

A joint venture is a special organization structure. It can be used in different fields. Joint ventures are also widely used in construction industry. The types of joint ventures and the motivations of the construction joint ventures are also summarized. As we know, subcontracting is a traditional ways of cooperation between the contractors. The problems why now joint ventures become such a popular way of cooperation and the differences of these two cooperation ways should be clarified. In this chapter we also summarized the differences between these two cooperation ways.

Risk management is an important topic in construction industry. It is also an important topic in construction joint ventures. The previous literatures of risk management in construction joint ventures are reviewed. The previous literatures focus on

how to allocate the risks between the partners. They did not focus on the topics of how to share one risk or multiple risks between the partners in the joint venture From the above analysis and survey we must say that the success of REITs in any country depends on that country's capability to customise the rules and regulations in such a way that they fit into their own markets. The introduction of REITs will help India's market become more institutionalized and will provide a new source of cash to Indian developers that have struggled to reduce debt with interest rates among the highest in Asia. The legislation has come at the right time so REIT could be the game changer for India's property sector. Globally REITs have been beneficial in improving transparency and standards and improving the professionalism of markets and we are expecting the same in India. India has the entire gradient to witness a successful REIT regime in the long term. A well framed efficient regulatory system is required which can ensure the best interest of investor, the market and the economy with introducing some instruments in terms of higher yield and less risk to both domestic and foreign investors. Definitely India has the right underlying dynamics to fuel the growth of the industry .Only time will tell if the potential is fully realized.