Chapter 6
Dispute Avoidance Through Equitable Risk Allocation

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Abstract Equitable risk allocation is considered to be the gateway to dispute avoidance. To this ends, allocation of risks in construction projects should conform to accepted principles. This chapter discusses the use of equitable risk allocation to reduce claims and disputes. An allocation tool that can be used for both risk allocation and evaluation is proposed. The tool is adopted from the one developed by the Public Works Department of the Australian State of New South Wales and employs the Abrahamson allocation principles. The evaluation function of the tool is illustrated by an exercise to unveil the risk allocation pattern of the FIDIC contract. The allocation function is demonstrated by an allocation exercise conducted with construction professionals in Hong Kong.

6.1 Introduction

Equitable and efficient contracts are considered to be the gateways to dispute avoidance. This view has been advocated in a number of industry reviews. For example, the Hong Kong first-ever industry review recommended that risk allocation is one of the areas that should be improved (Construction Industry Review Committee (CIRC) 2001; Levett 2001) as fair risks allocation would reduce the happening of disputes. Similar suggestions have also been forwarded in the industry reviews conducted in the United Kingdom (Egan 1998; Latham 1994). Traditional discrete economic transaction favours 'sharp in by clear agreement, sharp out by clear performance' (Macneil 1974), but many contractual relations are not of this well-defined kind. Hence, contractual transactions and relations need more systematic planning. According to Macneil (1975), two processes are

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essential to contract planning, namely, defining goals and communications. A perfect contract is often referred to one that anticipates and disposes of all possible future problems and questions. The planning of such a perfect contract is difficult if not impossible, particularly with regard to risks planning.

Risk can be defined as the exposure to the probability of economic or financial loss or gain, physical damage or injury, or delay, as a consequence of the uncertainty associated with pursuing a particular course of action. The concept of risk is a recognition that human beings are in a constant state of partial ignorance about the future. Risks reduce whenever man acquires more knowledge about the occurrence or non-occurrence of future loss (Macneil 1975). Uncertainty represents situation where there is little or no empirical basis for the information of probability distribution (Chapman and Cooper 1987). The above definition indicates that risk has at least two components; risk event and potential loss or gain. Nevertheless, it is common for risk to be considered having negative impact only. The degree of riskiness varies with the complexity, size, and duration of the project. Contractual provisions distribute risks between the parties who, in turn, seek compensation, usually financial, for the risks that they assume. The risk distribution pattern thus has a major influence on contract price. The application of risk management provides explicit recognition of the risks which parties to a construction project are required to take. In extreme cases, one-sided risk allocation can result in a party withdrawing from the proposed scheme. In markets where the contractors have inferior bargaining power, they may have to take on onerous risk-laden contracts. It is not uncommon to find these projects end with major disputes. Unreasonable risk allocation therefore laid the seed of dispute.

6.2 Risk Management as a Decision Making Process

Head and Horn (1985) suggest that risk management can be implemented as a 5-stage decision-making process: (i) identifying exposures to loss; (ii) examining feasibility of alternative techniques; (iii) selecting apparent best techniques; (iv) implement the chosen techniques and (v) monitoring and improving the risk management programme. The first step involves liability exposure identification and analysis. Liability exposures can be property, income, liability or personnel. Notable methods to identify these exposures include using standardised survey, examining financial statements, searching through records and files, drawing flowcharts, personal inspection and seeking expert advice. Impact analyses shall then be performed to evaluate the degree of riskiness against organisational objectives. Furthermore, the overall impact of a certain risk can then be assessed in terms of its occurrence likelihood and loss severity. Those risks that are having high chance of happening as well as bringing significant loss top the list for special attention and treatment. Risks can either be controlled or financed. The aim of control measures is to reduce chance of happening. If complete avoidance is not feasible, the risk may have to be retained or transferred through financial or contractual arrangement as appropriate. The third step is to choose the apparent best techniques. There is certainly no obvious solution and each case will have to be examined in its own facts. It is a balanced decision of deriving the desired outcome through effective use of risk control; risk financing or a combination of both. The fourth step is to devise plan for implementation. This is often the major stumbling block. Resistance to change has been proven to be more difficult to succumb than technicalities as far as implementation is concerned. For all management processes, feedback is essential. Not just to evaluate the performance of the system, feedback can help the organisation to learn and improve (Wong et al. 2007). In the long run, an effective feedback system should enable an organisation to map out strategies to better manage the risks. For example, feedback shall provide data for more accurate assessment on occurrence likelihood of the risk events.

6.3 Risk Classification

Risks have been described as pure, speculative, static, and inherent (Doherty 1985; Greene and Serbein 1983; Grose 1987; Moore 1983). In construction, a number of classifications have also been suggested. Mason's (1973) classification emphasises the nature of obligations and losses. Erikson (1979) categorised risks in construction as being either contractual or construction oriented. The list of risks by Abrahamson (1984) highlights the potential risk areas. The classification of Casey (1979) is more systematic. Broadly, four categories of risk are proposed; physical, capabilities-related, financial & economic and political & societal. The risks identified by Casey (1979) are adapted for use in this study because these risks are characterised as being inherent in construction projects and exclude those created by the parties themselves. The left most column of Table 6.1 lists the risk events included in this study. The remainder of the table will be explained in subsequent sections of this chapter.

6.4 Risk Allocation

Risk allocation has been identified as one of the important strategies that the Australian construction industry should improve (NPWC 1990). Risk allocation determined on a sound commercial basis would reduce the occurrence of dispute (NPWC 1990). Unrealistic risk shifting is a major cause of dispute (Wall 1994). This is because construction business is highly competitive and many contractors are willing to take on projects where the risks have not been adequately priced for. If these risks did eventuate, the contractors are tempted to recoup the losses incurred by raising and protracting claims and disputes.

Allocation principles have been suggested by a number of researchers (Abrahamson 1984; Ashley 1977; Barnes 1983; Erikson and O'Connor 1979; Perry and

Table 6.1 Risk allocation pattern of studies in Hong Kong: An example of the use of the tool

Events	Risk allocation principles					Total score	Risk allocation
	P_1	P_2	P_3	P_4	P_5		
Physical							
Giving possession of site	5	5	5	5	5	25	E
Latent conditions	3	5	5	5	3	21	E
Inclement weather	3	3	3	3	3	15	S
Force majeure	3	3	3	3	3	15	S
Inadequate design	5	5	5	3	5	23	E
Errors and omissions in quantities	5	5	3	3	5	21	E
Capabilities-related							
Defective works	1	1	1	1	1	5	C
Theft and vandalism	1	1	1	1	1	5	C
Default of suppliers and subcontractors	1	2	2	1	1	7	C
Labour injuries and accidents	1	2	1	2	1	7	C
Productivity of labour and equipment	1	1	1	1	1	5	C
Financial and economic							
Inflation	3	4	3	4	3	17	S
Availability of labour and equipment	1	1	1	1	1	5	C
Political and societal							
Changes in laws and regulations	3	4	3	3	3	16	S
Public disorder	3	4	4	3	3	17	S
Labour disputes and strikes	2	2	3	2	3	12	S

Hayes 1985; Porter 1981; Thompson and Perry 1992). The five principles suggested by Abrahamson (1984) are considered as the most embracing and therefore are used in the allocation tool (NPWC 1990). Modifications in terms of using plain English instead of legal phraseology are effected for ease of understanding by the users. The five risk allocation principles used in this study are listed below.

Risk should be allocated to:

P_1 : The party who can best control the risk effectively.
P_2 : The party who can best be able to undertake the risk financially.
P_3 : The party who has the most information to forecast the risk.
P_4 : The party who can benefit most in controlling the risk.
P_5 : The party with whom the risk is inherent in its commercial role.

Risk distribution based on the above principles was implicitly approved by the House of Lords in *Photo Production v. Securior Transport 1980* (Furmston 1986) per Lord Diplock's statement, *"it is generally more economical for the person by whom the loss will be directly sustained to do so rather than be covered by the other party by liability insurance"*. These principles are also sustainable under the economic concepts of efficiency and value maximising (Harris and Veljanovski 1986).

Lloyd (1996) succinctly summarises that risk allocation in construction is a matter of assigning responsibilities in the light of ability to control, to foresee or to manage the said risk. Risk allocation principles can well be explained with this conceptualisation.

6.5 Risk Allocation Under FIDIC Conditions of Contract

FIDIC is the French acronym for the International Federation of Consulting Engineers. Founded in 1913, the FIDIC aims to promote in common the professional interests of the members associations and to disseminate information of interest to members of its component national associations. The publications of FIDIC include standard pre-qualification forms, contract documents and client/consultant agreements. The FIDIC contract is widely used in international projects. The risk allocation pattern of the FIDIC contract is examined by a desktop analysis with respect to the risks categorisation developed by Casey (1979). The FIDIC contract referred in this study is the 1999 edition of the Conditions of Contract for Construction for Building and Engineering works designed by the Employer. A brief account on the relevant clauses is given below and a tabulated summary is presented in Table 6.2.

6.5.1 Physical Risks

Under Clause 2.1, the Employer shall give the Contractor right of access, and possession of, all parts of the Site within the time (or times) stated in the Appendix to Tender. …… If no such time is stated in the Appendix to Tender, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as may be required to enable the Contractor to proceed in accordance with the programme. Under Clause 4.12, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutions, which the Contractor encounters at the Site when executing the Works. These include sub-surface and hydrological conditions but not climatic conditions. Thus latent condition is included under Clause 4.12. If the Contractor encounters physical conditions which are unforeseeable, and suffers delay and/or incurs cost due to these conditions, the Contractor shall be entitled to extension of time and such cost. Procedural requirements such as proper serving of notices shall apply. Climatic condition is not considered as physical conditions under the FIDIC contract. Moreover, exceptional adverse climatic condition is one of the causes of delay that would entitle the Contractor to an extension of time for completion under Clause 8.4. and additional payment under Clause 20.1.

Force Majeure is defined in detail under Clause 19. Force Majeure means an exceptional event or circumstance:

Table 6.2 The risk allocation pattern under FIDIC

Events	Clause No.	Risk Allocation
Physical		
Giving Possession of site	2.1	E
Latent conditions	4.12	E
Inclement weather	8.4	E
Force Majeure	19	E
Inadequate design	13.1	E
Capabilities-related		
Defective works	11.2	C
Theft and vandalism	4.22	C
Default of suppliers and subcontractors	4.4	C
Labour injuries and accidents	4.8	C
Productivity of labour and equipment	4.17	C
Financial and economic		
Inflation	13.8	E
Availability of labour and equipment	4.1	C
Political and societal		
Changes in laws and regulations	13.7	E
Public disorder	19	E
Labour disputes and strikes	19	E

E: Risk to be borne by the principal
S: Risk to be shared between the principal and the contractor
C: Risk to be borne by the contractor

(a) which is beyond a party’s control,
(b) which such party could not reasonably have provided against before entering into the Contract,
(c) which having arisen, such party could not reasonable have avoided or overcome, and
(d) which is not substantially attributable to the other party.

Under those circumstances, the party can be excused from performance of such obligations for so long as such Force Majeure prevents it from performing them. The Contractor who is affected by Force Majeure is entitled to extension of time for completion and additional payment.

Instructions by the Engineer to change the quality and other characteristics of any item of work shall be treated as variations (Clause 13.1). The contractor is entitled to both time and cost reimbursement if justified.

6.5.2 Capability Related Risks

The risk events listed under this category are related to the ability of the contractor to complete the work. These include the provision of plant and labour to carry out the work in such a manner that the contractor’s obligations will be honoured

(Clause 4.17). Works carried out by subcontractors and materials supplied by supplier should be properly monitored. The Contractor is responsible for any default of his subcontractors and suppliers (Clause 4.4). Any defective work shall be rectified by the Contractor at his own costs (Clause 11.2). Security of the site and protection against theft and vandalism are also the Contractor's responsibility (Clause 4.22).

6.5.3 Financial and Economic Risks

The contractor is responsible for the availability of the resources that are necessary for the proper completion of the works (Clause 4.1). Under Clause 13.8, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labour, Goods and other inputs to the Works. The amounts are determined by applying a general formula that includes change in indices on labour, equipment and materials.

6.5.4 Political and Societal Risks

Clause 13.7 of the contract allows the contract price to be adjusted to take account of any increase or decrease in cost resulting from a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract. If delay is resulted, extension of time is also allowed. The Contractor therefore does not need to take the risk of changes in the Laws.

Public disorder is treated as Force Majeure as this is beyond the reasonable control of the contractor (Clause 19). The Contractor is entitled to time adjustment and cost recovery. Labour dispute & strikes has to be beyond the Contractors' own labour issues in order to qualify as a Force Majeure event under Clause 19.

6.6 Pattern of Equitable Risk Allocation: A Hong Kong Study

Contract planners can use the risk allocation tool to establish the allocation pattern before actual drafting of the conditions. A risk allocation tool described here follow is used to elicit the pattern of risk allocation of construction professionals in Hong Kong. Table 6.1 presents the basic structure of the tool used in this study.

Table 6.3 Comparison of risk allocation: survey data and FIDIC

Events	Risk allocation pattern under FIDIC	Pattern obtained from the Hong Kong study
Physical		
Giving Possession of site	E	(19) E
Latent conditions	E	(13) S
Inclement weather	E	(14) S
Force majeure	E	(15) S
Inadequate design	E	(22) E
Capabilities-related		
Defective works	C	(8) C
Theft and vandalism	C	(8) C
Default of subcontractors and supplier	C	(7) C
Labour injuries and accidents	C	(8) C
Productivity of labour and equipment	C	(7) C
Financial and economic		
Inflation	E	(13) S
Availability of labour, materials and plants	C	(8) C
Political and societal		
Changes in laws and regulations	E	(14) S
Public disorder	E	(15) S
Labour disputes and strikes	E	(12) S

The scores in each row against each risk event are then totaled and the interpretation of the total score is taken as:
Score of 5–10 Contractor's obligation/risk
Score of 10–20 Shared obligation/risk (score close to 10 indicates the contractor has a bigger share of the obligation/risks though the risk is shared, similarly, the principal assumes a bigger share of obligation/risk if the score is close to 20)
Score of 20–25 Employer's obligation/risk

Risk events are listed on the left most column and the risk allocation principles are listed on the top most row. Each of the respondents was requested to give scores against each risk event. A score in the range of 1–5 was to be assigned under each of the allocation principles listed. A minimum score of 1 and a maximum score of 5 was possible for each risk event examined under each allocation principle. A score of 1 indicates a presumption that the event is clearly the responsibility of the contractor; 2 that it is more than 50 % the contractor's responsibility; 3 that it is a neutral event between contractor and principal's responsibility; 4 that more than 50 % the principal's responsibility; 5 that it is clearly the responsibility of the principal. Table 6.1 gives an example of data provided by one of the respondents. The average scores obtained for the 230 respondents of the study are presented in the right most column of Table 6.3.

6.7 Discussion

The average scores for the risks are presented in Table 6.3. The score against each risk event serves as indication of the risk distribution preference. For ease of comparison, the risk distribution pattern in the FIDIC contract is also presented in the middle column of Table 6.3, together with the Hong Kong data. The "Construct for Excellence" document recommends that a contracting party should bear a risk that is under his control and unrealistic shifting of risk will increase likelihood of dispute (Construction Industry Review Committee (CIRC) 2001). Ravey (1992) is also of the same opinion that a more balanced agreement is a preferable option as a mean of avoiding conflicts. The relationship between risk allocation and incidences of dispute can be considered in the light of a life cycle model of conflict (Gardiner and Simmons 1992). Divergences of interest, value are sources of dispute (De Bono 1985). These include the difference in perceptions regarding risk ownership. In other words, the existence of a risk allocation pattern that is considered by either party to a contract as inequitable may create a conflict situation. Usually, a contractor, to whom onerous risks are shifted, will feel aggrieved. This creates tension and stress between the contractor and the employer and attitude towards problems that may arise will become more confrontational and less cooperative. Manifestation of such conflict happens when such risks eventuate. If the contractor has not made sufficient coverage or allowance for such risks, which often being the case, he will seek to redress the losses through all possible channels, typically through raising claims and disputes (Lewis and Carter 1992). Unrealistic risk shifting creates tension and hinders cooperation between the contracting parties. Disputes are, in many instances, manifestation of such conflict.

Under the category of physical risk, there is no variance between the result of the survey and the desktop analysis of the FIDIC contract for possession of site and inadequate design. The responsibilities for latent conditions, inclement weather and force majeure have always been controversial. In Hong Kong, Employers would like to shift this risk towards the contractor. However, contractors usually are not given sufficient time to carry out investigation work to enable a proper risk assessment. It is of interest that a share strategy is generally preferred in Hong Kong for both financial and political risks. The only exception is availability of labour, materials and plants. Generally where these risks materially affect the progress, time adjustment is allowed but with no loss and expense. It is quite different in the case of FIDIC where the Employer takes up responsibility. It can be said that the FIDIC approach would enable the contractor to putting in too high or too low an allowance for these risks. An inadequate allowance laid the seed for dispute should the risks materialise.

The capabilities related category shows great consistency. The risk events under this category are either under the control of the contractor or considered inherent in the contractor's commercial role. Therefore, there is no doubt that the contractor should be the risk bearer. The survey data well illustrates this.

It can be concluded that the risk allocation in the FIDIC contract acknowledges the fact that the site is owned by the employer. The employer therefore has much more time to assess the risks arising from the site conditions, be it physical or latent. Asking the tendering contractors to do the same tasks within the tender period is unrealistic and uneconomical. Furthermore, for those risks that the contractor has no control, the employer allows both time and cost adjustment if FIDIC contract is used. Although sharing is an appealing approach, its realisation by giving time redress but no monetary compensation appears to be a strategy of convenience.

6.8 Chapter Summary

The methodology used in this study is inherently subjective. However, the risk allocation tool used in this study can be used as a starting point to determine which risks to be borne by which parties. Parties to a contract can use the model as a guide in risks planning/allocation during contract negotiation. It can also be used as a risk identification and assessment tool during tender preparation. Systematically listing of risk events is useful for risks identification. The list of risk events used in this study is by no means exhaustive and can be extended or reduced to suit the particular project under scrutiny. As for risks allocation, with greater number of respondents, the risks allocation pattern so derived can be taken as a fair representation of the industry view of an acceptable 'equitable allocation'. In this study, it is found that the FIDIC contract allocates risk to the party who has the better ability either to foresee, control or manage such risks.

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