

DEVISING CONTRACT TERMS IN CONSTRUCTION CONTRACTS TO PRODUCE EFFICIENT PERFORMANCE

E. C. Ryan

School of Civil Engineering, Kingston University, Kingston upon Thames, Surrey, UK

The substance of contract terms has a major influence on the performance by the parties to a construction project. Analysing risk has become an important pursuit in project management and its significance is not questioned since the financial consequence of project uncertainties can be very high. It has been proposed by some sources that a balanced risk allocation in a construction contract will produce improved satisfaction of the parties to construction contracts. This paper reviews this concept and challenges some of the claims made by merely allocating risk. The research involved an examination of the theories of organisational economics and their relevance in devising contract terms with the aim of producing a model which would increase the efficiency of contract performance.

Although the attributes produced in new institution economics have been examined previously they have restricted their analysis to organisational governance. The paper gives clear indication that the same attributes can be used in producing a more efficient contract.

Keywords: Contract terms, information, transaction cost, risk.

INTRODUCTION

Standard conditions of contract for construction works are proliferating. Over the past decade or so the Joint Contracts Tribunal (JCT) has unsuccessfully attempted to fulfil the expanding needs of the industry as there is still no standard form of contract produced for construction management. During the early 1990s, expansion occurred in the civil engineering field with the Institution of Civil Engineers (ICE) publishing a complete set of documents comprising a selection of forms, namely the Engineering and Construction Contract (ECC 1995) for use with different methods of procurement which now rivals its own Conditions of Contract document produced since 1945. In the early 1990s the Department of Transport was looking to different methods of procurement and produced conditions for design and build (Dept of Transport 1993). The Highways Agency continued in the same vein and indicated their intention to try a wider range of contract conditions and procurement methods (Highways Agency 1996).

The commonly stated advantage of standard forms of contract is that they work well because all the users are familiar with their terms but this must be losing its impact when so many exist. Furthermore, it has been argued that construction projects may need bespoke contract conditions (Hughes and Greenwood 1996).

It is becoming increasingly important to understand how these conditions should be constructed in terms of content. For this purpose the legal drafting should be separated from the substance defining the rights and obligations of the parties to perform their roles. Although the two are closely related, the legal drafting is a process of putting into

language that which the parties require in substance and is normally considered a legal process with the courts giving the ultimate interpretation to language used in contract terms. It is not the intention, therefore, to examine the legal drafting but to investigate the ramifications of the substance on the resulting success of the parties completing their bargain. It must be the goal of the draftsman, legal or otherwise, to produce efficiency of performance in this respect. In the contractual sense, efficiency relates to performance (Aryes & Gertner 1992).

The main objective is to seek the resource allocation, which will produce the maximum value and propose a model, which can be used to examine the efficiency of a construction contract using any procurement system with a view to increasing such efficiency. Such a quest is also in accord with government policy seeking value for money (HMSO 1995). Defining efficiency of a contract must be a fundamental precursor to examining the construction of its content. The contract itself has basic objectives, which in simple terms, can be defined as the performance by the contractor to complete the works to the clients requirements, and the performance by the client to pay. Where contracts leave room for disagreement on these matters they can be considered to be incomplete and less than efficient, on the presumption that alternative arrangements and terms are possible and will lead to increased efficiency. The resources expended by either party to ensure performance by the other relates to the contractual efficiency, which includes resources, expended in resolving disagreements. The prime objective of the drafters of construction contracts must be to seek these alternative terms.

The method used to derive a model which would produce more efficient construction contracts was to examine the economic environment in the which the construction industry is organised with regard to the traditional form of procurement (design and construction separated between client and contractor). In seeking more efficient alternatives the question of risk allocations presently used is scrutinised initially since these have traditionally been used to analyse the obligations of the parties to construction contracts. Finally an alternative method of devising contract terms is proposed based on principles formed from the attributes of new institution economics.

RISK ALLOCATION: THE TRADITIONAL APPROACH

For some time now the question of risk allocation has been considered important in determining the efficiency of construction contracts and in assisting the parties to complete their bargain (Abrahamson 1973). There seems to be a presumption that where risk is allocated in some optimum way, the parties to a contract will co-operate and conclude the bargain with a minimum of effort. The general theory being that the correct allocation of risk will produce better construction contracts (CIRIA Report 100 1983). The object of allocating risk should therefore be;

1. To motivate the contractor to reduce cost/value,
2. To motivate the employer to reduce cost wherever possible,
3. To enable the works to be complete in an acceptable time,
4. To reduce contentious claims,
5. To reduce the necessity of using litigation/arbitration procedures to resolve disputes,

In order to achieve these objectives the parties have to be motivated. Perry and Hayes (1985) have stated that factors to be considered in distributing risk include;

- (a) the party which can control the events which may lead to the risk occurring,
- (b) the party which can best control the risk if it occurs,
- (c) whether or not it is preferable for the client to retain an involvement in the control of the risk,
- (d) the party to carry the risk if it cannot be controlled,
- (e) whether the premium to be charged by the party to which the risk is allocated is likely to be reasonable and acceptable,
- (f) whether this party is likely to be able to sustain the consequences if the risk occurs,
- (g) whether, if the risk is transferred, it leads to the possibility of risks of a different nature being transferred back to the client,

The main thread running through items (a) to (d) involves the control over events and risk. The remaining items relate to the financial and other consequences of the risk allocation.

Others have put forward criteria for allocating risk such as the party to take the risk should be the party who assesses the risk to be smaller or who has the most accurate assessment of it (Inyang 1983). This particular criteria is quite useful when the risk being allocated cannot be controlled.

Again Abrahamson emphasises the control element in risk: -

By extracting the risk that cannot be controlled by the contractor, the client can expect a range of tenders that concentrate on methods and cost of construction. (Abrahamson 1973)

A situation, which supports this statement, occurred in *Farr v The Admiralty*¹ where the contractor had to pay for the repairs to the jetty they were constructing caused by the occupation of the site by the Admiralty. On the above criteria this was clearly an example of poor risk allocation, which led to litigation.

CIRIA Report 100 still encapsulates what is currently seen as good practice:

...for the success of any construction contract the risk must be acknowledged and clearly allocated between the client and contractor. The risk should be carried by the party which is best able to assess, evaluate and control it.

In allocating risk, thought should also be given to the need for incentives to ensure that all parties perform efficiently...

Dering (1992) has placed great emphasis on the proper and detailed allocation of risk in devising contract terms. The clear allocation of risk to remove any surprises to either party in such a way as to reflect the bargain would produce a construction contract which would bring about an outcome which both parties would consider "broadly satisfactory".

The substance of the contract, it would seem, is greatly affected by the way in which the risk is allocated. It has therefore been concluded that the correct allocation of risk is germane to the efficiency of the construction contract (Barnes 1983).

¹ *Farr v The Admiralty* [1953] 2 All E.R. 512.

ECONOMIC ORGANISATION AND CONSTRUCTION.

In the 1930s, Coase developed his theory explaining the existence of the firm and its fundamental unit, the transaction. However, this was little progressed until the 1960s and 1970s. It was not until the 1970s that the transaction cost approach emerged as a major consideration in organisational analysis. Coase's original question of 'why the firm?' was refined, requiring to know whether economic exchanges should be organised within the firm or within the market and focused on market failure (Williamson 1975). The fundamental unit of analysis was transaction cost, which was defined as the cost of running the economic system (Arrow 1979). Transaction cost together with production cost approximates to the total cost of the product and the principle is that the organisational governance, which minimises on transaction costs, will prevail ignoring certain factors (Coase 1960). It can be readily seen that such a system is useful in analysing the vertical integration of different firms (Joskow 1988) and much literature exists on this topic.

The attributes of transaction costs relate particularly to market conditions and have included a large element of behaviour as well as some neoclassical economics (Williamson 1988). Economic exchanges in the market are controlled by contracts. It is in this area that procurement and contractual arrangements are important. The following examines the attributes of transaction costs in relationship to the construction environment and some understanding of these attributes is necessary to analyse why the traditional forms of procurement in construction suffer from problems.

Construction exists in a very uncertain environment. The increasing complexities of the modern construction project make it impossible to write a fully contingent contract, where all possible eventualities can be defined precisely and particular remedies given. Furthermore construction is organised in the market where price is the intended to be the control mechanism.

Complexity and uncertainty. Where transactions are simple as when a paper is purchased from a news stand then the cost of executing the contract will be low, thus the notice paid to the resulting contract is negligible. As the nature of the transactions becomes more complicated so the resulting contract needs to be more explicit to deal with the possible contingencies which may arise (McNiell 1979). So at some particular level of complexity a boundary exists beyond which contingencies can be considered, together with mechanisms which enable how such contingencies could be dealt with, should the need arise. It becomes impossible to rationalise these contingencies. These conditions in the complex transaction have been described as bounded rationality (Simons 1957).

With the complexity that exists with a traditional construction contract, it is an impossible task to produce all the construction information for a project before the start of the physical work. The chances of errors and omissions are high and because of the limitations of being able to visualise the finished product changes become inevitable. The designer has to rationalise the whole process in attempt to ensure that no mistakes occur during construction. This task is usually impossible if the design is to be completed within a reasonable period of time. It is normally seen as preferable to accept some mistake rather than to rationalise the whole process perfectly. The degree to which rationalising is undertaken must be to optimise the whole of the client's trading as witnessed in the property boom of the 1980s where fast-track methods were employed to speed the whole process and thus enable owners to gain rent revenue as early as possible at some financial sacrifice in the construction phase. Thus there was a trade-off of

rationalising for the benefit of income following the transaction, a situation that often exists in the oil industry.

Although physical construction has not developed into a high technology industry certain technological advances have allowed for more rapid construction which allows less time for the resolution of design omissions, with the result that it is necessary to look further ahead when planning the construction phase of a project. When the requirement for speed is combined with large project size the rationalising or comprehending of the whole physical construction process in detail becomes much more difficult. Programming techniques have been developed to aid the rationalising of the process but such rationalising has been considerably negated by the uncertainties, which are inherent in construction.

Uncertainties internal to the works, such as ground conditions or external due to political or environmental conditions may demand changes to the construction works itself. It is in the physical construction phase that most uncertainties exist. Apart from those incidents that interrupt the production of work, such as weather, ground conditions, physical interference from third parties, accidents etc. the rate of progress may be affected because output rates for labour and plant cannot be accurately predicted for each individual project. This latter affect on progress is not often discussed openly and only indirect reference is made to this aspect post-project. Admissions of unpredictability of outputs would have a very important effect in establishing the additions to the Contract Sum or the Contract Price as the case may be.

Asset specificity. In general, where a contracting party has to make a large investment in order to fulfil his part of a bargain he will not be able to withdraw without substantial losses (Williamson 1986). He will also be vulnerable to the other contracting party attempting to re-contract or re-negotiate. There may be problems regarding imperfect commitment. The same conditions prevail in small numbers competition where parties find themselves locked into a contract from which they find it hard to withdraw.

The construction market has many competitors and it is doubtful that it could be described as small numbers competition. However, once the contract is awarded the environment of small numbers obtains where neither party can withdraw without incurring considerable cost. The further the construction works advance the more acute this condition prevails. Such a condition has profound effects on construction project where bargaining has to take place to place prices on design omissions. Bargaining ex-post (after the contract has been executed) is always open to great difficulties.

Opportunism. From the above attributes it seems obvious that self interested parties will take advantage of contingent claims contracts and attempt to re-contract where ever it will produce a gain. Such opportunistic behaviour will lead to the withholding of information by either party where this information may be detrimental negotiating position and where it can be used to improve profit. It is inevitable that in complex transactions the parties will possess different information, which they will attempt to use to their advantage. Any disclosure of information may disqualify them from benefit. Informational problems will inevitably cause hold-ups in the bargaining process.

In construction projects the opportunities for complete re-contracting are rare since the contract itself recognises that changes will occur and general contingencies are allowed for in the drafting of the contract. The re-negotiation of many small elements of the work is rife, as they have to be changed as a consequence of bounded rationality. Where construction detail is missing, variations issued, ground conditions are unexpected, or low prices submitted by the contractor then one of the parties will take opportunities to

increase profit or reduce loss. The degree to which this can occur relates to the certainty of information. In an environment of perfect information all parties would have full knowledge of all the circumstances of a claim for additional moneys and the consequent bargaining would be short. This kind of information does not exist and in economic terms information is incomplete. Such informational problems lead to extended bargaining in construction and high transaction cost.

The attributes of transaction cost would indicate that the cost of running the economic system in construction is likely to be high (Winch 1989). The primary cause for these high costs is the behaviour of the parties to the contract who make it difficult to obtain the final price. Further to this is the costs of surveillance, resulting from possible defects, will be high. When construction is approached from transaction cost economics, Winch has suggested that construction is a failed market and that a move towards the quasi firm is required. Such a move, to relational contracting or partnering would establish an atmosphere enabling a reduction in transaction costs and produce a more efficient form of procuring the construction product. Of course, in these conditions of quasi-firm the contract terms are less important.

In neoclassical economics, price theory would indicate that the price regulates the market because it encapsulates the total information required for control, in the same way that the decision maker would need information in regulating organisation within the firm. Similarly, transaction costs encapsulate all the information regarding the efficiency of a transaction and therefore where the transaction takes place in the market they will indicate the efficiency of the contract. However, rigorous testing of transaction cost theory is not easy because extracting transaction cost out of the total cost of construction is difficult and would include supervision/surveillance costs as well as the cost of arriving at the final price.

In summary, the way that construction is organised, the contracts are not fully contingent. This gives rise to opportunities in renegotiating parts of the project works. The negotiation has to take place in an environment of incomplete information and therefore becomes prolonged and costly to execute.

CONSTRUCTION CONTRACT TERMS

For a considerable period, the notion of risk allocation has been used as an indicator as to how well construction contracts would perform. Risk in the sense discussed here also includes uncertainty and in construction one or other of the parties to the contract must accept the individual risks. Allocating the risk to the party that can best control events prior to and after the risk occurs is a matter which facilitates good management since it allows the party concerned to control his costs, usually by keeping them to a minimum in order to maximise profits. The allocation of risk is an inevitable consequence of the drafting of contract terms since it is inextricably linked to the defining of liabilities and obligation of the parties to the contract. Although risk, per se, is important to the management of the individual internal organisations (firms) participating in construction project, the question must arise as to its importance in drafting the substance of the contract in relation to market exchange between organisations.

Standard forms have been revised on several occasions and various interested parties have formed committees in an attempt to allocate risk “fairly” yet the affects on the completion of the bargain between organisations operating on the construction project has not improved noticeably since the scope for opportunism still remains great. It has been noted above that the allocation of risk will assist the parties to control their own cost

but does nothing to control the final price paid, as witnessed by both Banwell (1964) and Latham (1994). Although risk needs identifying and managing, its contribution to the efficient forming of the substance of the contract has been extremely limited since the ascertainment of the final price remains extremely prolonged and costly. We therefore have to look to the economic factors of the bargain to seek efficiency in contract content to facilitate market exchange.

The reduction of transaction cost in any risk allocation will produce a more efficient market exchange. Therefore when drafting a construction contract it becomes important to generate terms which will reduce this prolonged bargaining. It will not be possible to reduce transaction cost to the level of a simple transaction since the product in construction is complex. However, by carefully examining the proposed terms to ensure that opportunism is negated where possible, will result in improved efficiencies. In the contractual substance of the economic exchange it may mean that the way the tender presents the price is important, whether this is by way of bills of quantities or lump sum, or the way the cost of variations are to be ascertained. Every occasion in the substance of the contract that gives the contractor, or for that matter the employer, opportunity to re-negotiate must be looked at to reduce transaction cost even to the extent of transferring risk in order to do so. The key principle in reducing transaction cost is to place the problems, which arise across market exchange into the firm. One way to do this is to move to the quasi-firm (Winch 1989) but another way is to reduce informational problems by modifying contractual terms.

In modifying contractual terms risk transfer should only occur taking full cognisance of the good management principles of the internal organisation as noted above. This means that interference with controllability should be avoided if possible, but should only be regarded as a secondary issue. However, the allocation of those risks which neither party has control over, is of little importance. Such a case would be viewed as an “unforeseen circumstance”. This case has been examined in terms of constructing construction contract terms (O’Reilly 1995) against four principles of allocating risk.

The first principle requires that risk be dealt with expressly in the contract. This emphasises good economic principles with regard to most risks and contract terms being contingent. However, it is clear that Clause 12 of the ICE Conditions of Contract excludes a common law remedy as indicated in *Thorn v London Corporation*² - where the Contractor has contracted to execute some construction work then it is his responsibility to construct that work. Whether the contract excludes this remedy or not, the important consideration with regard to contract efficiency is the degree to which it will generate transaction costs. It has been noted that even language suffers from bounded rationality (Williamson, *ibid*) so express contract terms have to be carefully drafted to produce efficiency.

The second principle is that the risk is allocated in a “clear, complete and unambiguous” way. This principle is consistent with the economics described above. Where possible fully contingent contracts should be drafted in which case informational problems disappear. For this particular condition it is impossible, by its very nature (unforeseen conditions), to produce a fully contingent contract. It is therefore clearer if the Contractor is left to construct the works without excepting particular conditions, which cannot be fully described in the contract. Wallace (1972) comments on this clause - “is not almost anything foreseeable?”. It is the necessity in Clause 12 to draw a line, which can only be indistinct, as to what is foreseeable and what is not, which gives rise to much

² *Thorn v London Corporation* [1876] App. Cas.120 HL

scope for opportunism. The case of *Humber Oil Terminal Trustees Limited v Harbour and General Works*³ would never have been referred to arbitration let alone come before the courts had Clause 12 been omitted. It is these legal resolutions which also add substantially to the transaction cost.

The third principle required that risk allocation should be motivational and suggests a preference for allocating risk to the party with the greatest opportunity to influence the magnitude of the risk and control the risk if it arises. It has already been suggested that the control of risk will improve the efficiency of the internal organisation, since decisions within the hierarchy (firm) can reduce the effects of the risk event in order to maximise profit. When risk is introduced into the market transaction through contract terms, the affects of the allocation cannot be controlled by same kind of decisions, as they will be regulated by the “invisible hand” (Smith, 1776) of the market in the same way that the price mechanism controls the allocation of resources. Once the risk is allocated ex ante the client can exercise no further control and the contractor may well be motivated to behave opportunistically where the contract cannot give specific contingencies. The party which can see an opportunity if the risk event occurs will have no incentive to reduce the effects of the risk, in fact quite the opposite. The existence of Clause 12 may well be seen as an opportunity by the contractor to maximise profit from unforeseen conditions in a situation of incomplete information.

Finally, the fourth principle is that the risk should be borne by the party most competent to shoulder the effects. This effectively puts a limit on either the risk allocation or the competence of the party. Providing the party has the ability to cope with the risk financially then they should carry the risk if the economic principles dictate that they should. It is becoming more obvious that the risk that contracting organisation can carry is quite considerable as evidenced by the PFI. >From the above it would indicate that the contractor should carry the risk for unforeseen conditions and the client should ensure he has sufficient financial capacity to carry the risk.

In transaction cost terms it would be better to allocate the risk of unforeseen circumstances to the contractor. In such a case the transaction cost would no longer be part of the cost in the market but would become a cost internal to the contracting organisation. It would be the contractor who would have to ensure he had sufficient information concerning this risk, which would incur a cost. The cost of obtaining this information would be present whoever was allocated the risk, but if this risk was allocated to the contractor the cost of bargaining (ex post) for the price of the circumstance, should it arise, is saved. No re-negotiation is required, which negates any opportunistic behaviour thus reducing transaction cost. However, it should be noted that in circumstances of incomplete information, where the contractor could not establish all facts at tender stage then he would have to include a risk premium in his tender bid.

CONCLUSION

Allocation of risk has two important consequences, one on the internal management of individual firms operating in the construction market and the other on the premium required for carrying the risk. These will influence the drafting of the substance of the contract but risk is not the most important element which should be considered. All elements contributing to transaction cost must be examined to negate opportunistic behaviour and the resultant reduction in transaction cost. If this can be achieved then the contract terms are made more efficient legally.

³ *Humber Oil Terminal Trustees Limited v Harbour and General Works* 59 BLR 1

Most commentaries on construction contract terms concentrate on the way they allocate the risk but such analysis should only be a secondary consideration as it's main impact is on the internal organisation. Analysis of contract terms using a transaction cost approach may well bring about some major transfers in risk from one party to the other but the resulting contract will perform and complete the bargain more efficiently. It is quite evident that more research in this field is required and may bring some of the improvements, which have been sought for so long. Savings in transaction cost would also reduce the total cost of construction which is another target contained in the Latham Report.

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