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GRAPHICAL RISK ALLOCATION MODEL IN CONSTRUCTION CONTRACTS FOR CHANGES IN MARKET PRICES

INTRODUCTION

One of the main purposes of construction contracts is to allocate risk and liability clearly, comprehensibly and unambiguously. Otherwise, arguments, including legal ones, between contract parties are inevitable, which always leads to extra expenses incurred by both parties [7].

The aim of this article is to analyse the allocation of risk between the participants of the construction process (the contractor and the client) when implementing construction projects, to analyse any constraints when allocating risks provided for in the Civil Code of the Republic of Lithuania (hereinafter referred to as the CC) and in other effective legal regulatory acts of the Republic of Lithuania, to determine to what extent the risk allocation depends on the terms and conditions of the construction contract and the behaviour of the parties to the construction contract when implementing the construction project.

Adequate and reasonable allocation of risk and liability in construction contracts makes the construction process more efficient, and a reasonable price is set in calls for construction contract bids. For example, C. Charoenngam and C.-Y. Yeh have found [2] that in East Asian countries if the client sets contract conditions in public procurement procedures for construction works contracts so that the greater part of the risk and liability is transferred to the contractor, the contract value increases dramatically. Significant price increases, due to inadequate risk and liability allocation between the client and the contractor, were also noticed in the USA and Canada [10]. The allocation of risk and liability between the contractor and the client has direct impact on the costs of construction projects [4]. In case of transferring the risks of performing construction works from the client to the contractor, two scenarios undesirable for the client are possible [9]:

1) seeking to insure oneself from risk consequences, the contractor increases the bid price,
2) the contractor does not increase the bid price and has financial problems in case of risk materialisation.

Neither scenario described above is desirable for the contractor. In the former case they will pay a higher price, and in the latter, they would have to implement the construction project cooperating with the partner experiencing financial problems, which also threatens the success of the project.

The risk is especially high when the object of the construction contract consists of complex buildings. If the risk is materialised during the construction process, it has great impact on the costs, duration and quality of the construction project. On the other hand, it is impossible to avoid all risks when executing construction contracts. Most often risk can only be distributed between the parties and managed [6]. Risk costs are always assumed by one or both contract parties.

When implementing construction projects, it is not unusual that disagreements and disputes concerning liability arise. It is possible to eliminate such ambiguities and disputes by setting the terms and conditions of liability allocation between the parties in a construction contract as clearly as possible. S.C. Ward, C.B. Chapman and B. Curtis [9] consider that for the proper distribution of risks between parties to construction contracts, the following two conditions are crucial:

1) trust between the contracting parties,
2) clear mutual understanding of all possible risks and their possible impact.

General terms and conditions of a construction contract with regard to the risk and liability allocation is the most important part of the construction contract documentation. For example, contract conditions providing for the contractor's liability for risks that are totally beyond their control or vice versa constitute a potential source of claims and arguments in many construction projects [4].

The scholarly works referred to above focus on the agreement between the parties to the construction contract (the contractor and the client) as regards the risk and liability allocation. Those works do not analyse the impact of legal norms regulating construction contracts on the risk and liability allocation.

The costs of construction works are influenced by various factors. Some factors depend exclusively on the contractor implementing the construction project while others are closely related to the sociocultural, economic, technical and political environment of the project location (global risk factors) [1].

The new Civil Code of the Republic of Lithuania, effective 1 July 2001, contains much stricter regulations concerning the issues of risk allocation and liability. The CC norms normally regulate the above issues by applying imperative legal norms. For that reason the afore-mentioned risk and liability issues are to a great extent conditioned by the CC legal norms and the contracting parties cannot change those provisions by mutual agreement. This is why this article focuses mainly on the legal aspects of the risk and liability allocation.

The aim of this article is to analyse how risk is allocated between parties to a construction contract in the case of a fixed price contract depending on the behaviour of the contract parties and taking into account the CC provisions.

It is universally assumed that fixed price contracts are most appropriate when the risk of price increase is low [3]. Although high risk usually exists when implementing construction projects (executing construction contracts), fixed value contracts are still quite common.

The fact of drawing a fixed price construction contract cannot be interpreted in such a manner that the contract value may be changed by any means. When executing construction contracts (including fixed value contracts), there may be situations when the value of the construction object increases significantly independently of the contractor's will, who did not and could not foresee such a price increase. Such cases include force majeure circumstances, modifications to the construction design project, major changes on the markets of construction products and labour force as well as the appearance of unforeseen additional works.

1. ALLOCATION OF RISK FOR MARKET PRICE CHANGES

The value of implementing a construction project (a construction contract) may change for the reasons beyond the control of the contractor. In most cases such changes are influenced by changes of market prices (of construction materials, labour force, mechanisms).

The risk allocation between the parties to the construction contract in such case is regulated by the construction contract and the CC. The above risk allocation also depends on the behaviour of the parties to the contract.

The CC analysis shows that when the market prices change or when for some other reasons not depending on the contractor the factual value of the construction works under the construction contract increases, two alternatives are possible (par. 2 of Art. 6.685 of the CC):

1) the factual value of the construction works increases by less than 15% (Figure 1, 1-2),
2) the factual value of the construction works increases by over 15% (Figure 1, 1-3).

In the former case the risk of changes in market prices is borne by the contractor unless otherwise provided for in the construction contract. In such case one must follow Articles 6.189 and 6.200 of the CC providing that the contract is binding for both parties and they must execute it even if they receive less profit than expected or even if they incur losses when executing the contract. In this respect the CC reiterates the provisions of the international principles of drawing commercial contracts (UNIDTROIT) and stipulates the principle of *pacta sunt servanda* demanding the adherence to and execution of contracts despite any possible difficulties.

The lawmaker considers that due to the increase of the factual construction work value by over 15% (the latter case) the execution of the contract becomes much more complicated for the contractor and in such case the requirement to follow the principle of *pacta sunt servanda* and to unconditionally fulfil the contract would breach the principles of reason, honesty and justice stipulated in the CC as well as the balance of the interests of the contracting parties. The above circumstance essentially changes the balance of contractual obligations (Art. 6.204 of the CC) and in such case another important principle of the law must be followed, which is *rebus sic stantibus*, implying that the contract must be fulfilled taking into consideration any changed circumstances. In such case the construction contractor has the right to demand a recalculation of the value of the construction contract. The contractor may exercise this right only while the contract is not yet fulfilled and only given the following conditions (Figure 1, 3-5):

1. Such circumstances (market price increase) arise or the contractor becomes aware of them after the contract is concluded. If such circumstances already existed, i.e. market prices were already higher, and the contractor was (or should have been) aware of that, the contractor must be deemed to have assumed all the related risk and not to be able to demand to adjust the contract value.
2. The contractor could not possibly foresee such circumstances. This means that the contractor would not be able to refer to such circumstances if the market price increase (e.g. due to inflation, tax reforms etc.) was officially forecasted.

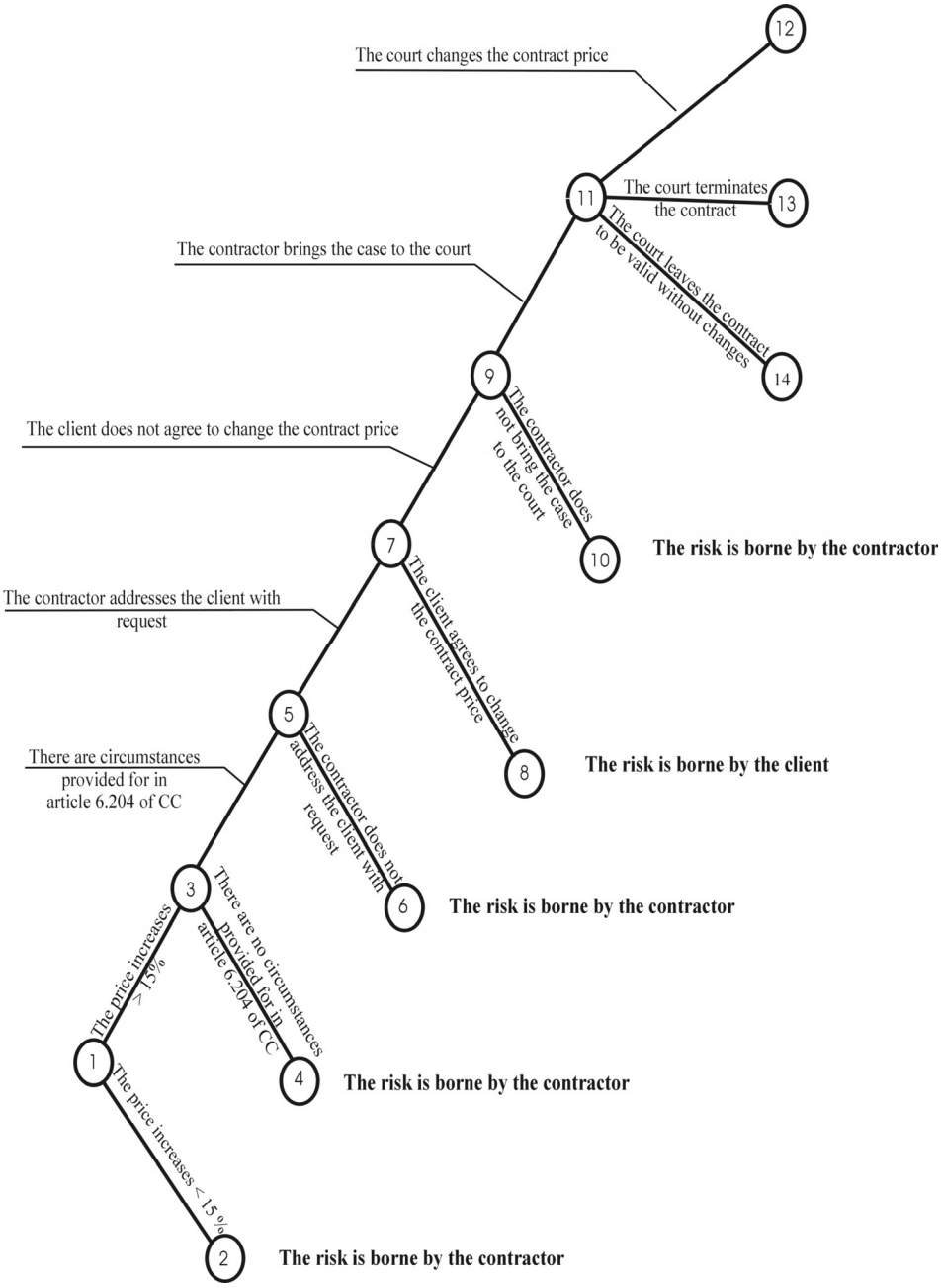

Fig. 1. A tree of variants of risk allocation for changes in the market prices

3. The contractor cannot control those circumstances, i.e. the circumstances are objective and independent of the contractor's will. Normally contractors cannot control market prices but if they can control any price component (e. g., when they manufacture certain products or provide a service), they cannot refer to the change of the market price of such a component and demand to recalculate the contract value.
4. The contractor did not assume the risk of the price increase. The contractor may assume the risk by explicitly stating so in the contract, or such risk assumption may be implied.

The CC does not prohibit providing also for other risk allocation conditions in a construction contract, for example, to include a provision of another percent of the price increase given which the contractor acquires the right to demand to recalculate the contract value. The contract may also contain provisions relating to pricing principles to apply in case of any changes in market prices of components of the construction work par value.

Given all the above circumstances, the contractor acquires the right to address the customer with the request to recalculate the contract value (Figure 1, 5-7). This means that even in case of the aforementioned circumstances, the contractor has no right to suspend the contract execution. In practice the CC provisions oblige the contract parties to initiate negotiations that from the procedural viewpoint would be treated as the mandatory pre-trial procedure of settling arguments. The contractor's request to adjust the contract value must be motivated and presented immediately. If the contractor does not file such request or does so when it is too late (Figure 1, 5-6), they bear all the costs of the increased value of the construction works.

If the contractor addresses the customer with the request to recalculate the contract value, two situations are possible:

1) the contractor and the customer agree on the contract value (Figure 1, 7-8),
2) the contractor and the customer do not agree on the contract value (Figure 1, 7-9).

If the contractor and the customer agree on the contract value, the contract is continued with the recalculated (adjusted) contract value valid. If the contractor and the customer fail to agree on the contract value, two situations are possible:

1) the contractor or the constructor brings the case to court (Figure 1, 9-11),
2) neither the contractor nor the customer brings the case to court (Figure 1, 9-10).

If the contract parties do not bring the case to court, the contractor must execute the construction contract with the contract value unchanged. Such conclusion can be drawn because there is no legal ground to terminate the contract, and the contractor may not unilaterally change the contract value.

If the parties go to court, they can appeal to the court with one of the following two claims: to amend the contract (the contract value) or to terminate the contract.

The court may settle the argument between the parties in one of the following three ways:

1) to terminate the contract and to set the date and terms and conditions of the contract termination (Figure 1, 11-12),
2) to adjust the contract value (Figure 1, 11-13),
3) to leave the contract unchanged (Figure 1, 11-14).

2. SPECIFIC FEATURES OF CHANGES IN MARKET PRICE RISK ALLOCATION IN PUBLIC PROCUREMENT AGREEMENTS ON CONSTRUCTION WORKS

Although the Civil Code is the major source regulating terms of the construction contracts, Article 6.382 of the present act of law provides that "provisions of the Code shall be applied to the public procurement agreements to the extent that other acts of law do not provide otherwise". Definition of the public procurement agreement provided in Article 6.380 of the Civil Code shows that procurement of construction works (drawing of construction contracts) is also attributed to the public procurement agreements.

The main specific feature of construction works procurement is use of public funds (government, municipality, state funds etc.) or any other funds equivalent to such funds for said construction works procurement. The use of other funds instead of private funds is determined by the fact that the procurement procedure is regulated in detail in the Law on Public Procurement and other subordinate legislation.

Taking into consideration the fact that the owner of funds disposed in the process of construction works procurement is not considered a subject of the construction works procurement, the state, by establishing the legal regulatory measures, limits the right of the said subject to make discounts for the contractor and regulates its conduct in detail.

Accordingly when implementing the construction contracts there exist probabilities of change in the integral elements of the market price (rate) of construction works or constructions costs (construction products, labour force, mechanisms etc.). Therefore the Law on Public Procurement regulates conduct of parties in such situations.

The Law on Public Procurement (Par. 3, Art. 15) imposes rather rigid requirements on the terms when drawing up an agreement: "When drawing a procurement agreement the winner's bid and procurement terms established in the procurement documents or bid shall not be subject to any amendments". Interpretation of the above-mentioned provision of the Law should be expanded: the bid and the agreement terms may be amended, however, such amendments should be beneficial to the procuring organisation. This interpretation is based on the fact that this provision is established in favour of the procuring organisation and it has a right to give its consent to amendment of the said terms of the agreement.

Paragraph 6 of Article 15 of the Law on Public Procurement establishes mandatory terms of the procurement agreement. Certain terms of the above--mentioned Paragraph of the said Article are related to pricing. Item 3 of Paragraph 6 of Article 15 provides that price or pricing regulations must be specified in the agreement. It means that the law does not require a unilateral specifying of the agreed price, but permits the price establishment by using the pricing regulations. Use of the pricing regulations (instead of price) is rather convenient in such cases when, for instance, the precise scope of construction works is not known.

Item 4 of Paragraph 5 of Article 15 of the Law on Public Procurement provides that the agreement shall include a provision on "inflation-related indexation of price or charges if the term of the agreement exceeds one year". The above-mentioned provision of the Law on Public Procurement allows us to make the following conclusions:

1. Agreement on the inflation-related indexation of price and charges is an obligation of the parties to the agreement. Listing of said provisions in the procurement document would be the most rational solution for the procuring organisation. In that case the above-mentioned provisions shall be also applicable to the construction contract. And conversely, if the parties fail to reach consent on the present terms, in a sense they may "be deadlocked", as the Law does not provide any other method for resolving such a problem. The obligation to agree on the inflation-related indexation of price and charges does not mean that indexation of price

is mandatory, i.e., a zero indexation coefficient may be applied. Such cases may occur when the procuring organisation includes a provision in the tender documents that a contractor will accept any and all inflation--related risk, and in accordance with the Law on Public Procurement such provision will be also applicable to the construction contract.

2. The provision will be applicable in such cases only if the term of the agreement exceeds one year. In fact said term (a one-year period) is applicable to the term specified in the construction contract instead of the entire term of implementation of the agreement. This conclusion can be drawn considering that a legitimately signed construction contract is binding upon the parties to the contract. Therefore the contractor has to perform the construction works within the period specified in the contract, and the procuring organisation is not held liable for compensation of any losses it incurs as a result of faulty implementation of the contract. The following is an exception to this rule: cases when the term of the contract was extended as a result of circumstances beyond the control of the contractor and the contractor is not responsible (force majeure circumstances, suspension of the construction works resulting from the customer's fault etc.), and if the contractor did not accept the risk of occurrence of such circumstances in the contract.

Item 5 of Paragraph 6 of Article 15 of the Law on Public Procurement establishes an obligation to include in the procurement agreement a provision on change in price and charges resulting from changes in taxes. Naturally, taxes are levied by the state and parties to the contract may not impact imposing of taxes. Following the law principles of prudence, justice and fairness, subject to changes in taxes that do not have any direct impact on cost price of construction works, contract price should correspondingly change. Value Added Tax (and also other taxes depending on turnover) as well as employees' social insurance instalments made by the Company should be attributed to the above taxes. The contract price should not be adjusted subject to change in the profit tax rate, individual income tax rate, etc. Changes in the above-mentioned tax rates do not have any direct impact on costs of construction works.

On 25 February 2003, the Director of the Public Procurement Agency of the Republic of Lithuania by his decree approved the Pricing Methodology of the Public Procurement Agreements (hereinafter referred to as the Methodology) where the above-mentioned provisions of the Law on Public Procurement are regulated in detail.

The Methodology provides that the following methods of price calculation may be established:

1) fixed price establishment,
2) fixed charge establishment,
3) charge base establishment,
4) partial coverage of the contract implementation costs,
5) coverage of contract implementation costs.

According to the price calculation methodology selected, risk resulting from changes in market price (rate) is differently allocated between the parties to the contract.

If a fixed price is specified in the contract, the contractor undertakes to pay the prices for all types of works performed in accordance with the contract. In this case risk of change in the market price (rate) is allocated to the contractor. Therefore the Methodology establishes limitations, i.e., it specifies when this price calculation method may be applied for a contract. The present method may be selected if two requirements listed below are met:

1) the customer can specify precisely the scope of work in the procurement documents,
2) when submitting the bid, the contractor has adequate potential to estimate and assess costs of the contract implementation and may accept the risk of such costs.

Analysis of the present terms enables us to conclude that a customer who decided to select said method of price establishment has to assess its potential both to precisely determine and estimate the scope of the requested work, and to objectively assess costs of the contract implementation by the contractor.

If a fixed charge is established in the Pricing Methodology, the final price to be paid by the customer to the contractor will depend on the scope of work carried out in the process of implementation of the contract. Therefore in this case the volume of risk allocated to the contractor is lower than in the case of the fixed price. In this case the contractor does not accept the risk resulting from increase in scope of construction works. It accepts only the market price risk (construction products, labour force etc.).

The fixed fee may be established prior to commencement of procurement if:

1) the customer is unable to identify the exact scope of work,
2) when preparing the bid, the contractor has adequate potential to estimate and determine the contract implementation costs per measurement unit of the procurement object and may accept the risk of the contract implementation costs per measurement unit of the procurement object.

The Methodology recommends establishment of a fixed charge in case of drawing up a long-term contract on the basis of which the scope of work to be carried out depends on circumstances that are difficult to forecast: a) at the moment of procurement and b) on the interim results of the contract fulfilment.

Price calculation methods specified in the Methodology such as the charge base establishment or the partial coverage of the contract implementation costs when carrying out the construction works may not be applied, therefore they will not be analysed in this article.

If the coverage of contract implementation costs is specified in the Pricing Methodology, the price to be paid to the contractor will be calculated by aggregating the amount of costs directly connected with the implementation of the contract actually incurred by the contractor, with the amount of profit specified in the Pricing Methodology and proposed by the contractor.

In this case, the entire price fluctuation risk in the price market (and also the risk of fulfilment of the scope of works of the contract) will be accepted by the customer. Such method of price calculation may not be applied when during the process of bid preparation the contractor has no potential to estimate and assess the contract implementation costs in advance, and in the process of the contract implementation may not accept risk of the contract implementation costs. The Methodology recommends using such price establishment method when new or non-standard works are performed, for instance, works related to research activities or implementation of sophisticated innovative projects. If this price establishment method is selected, the entire risk of price and scope of works is allocated to the customer, i.e., state or municipality institution and funds of the state, municipality budget and other funds equivalent to them are exposed to risk. The Methodology establishes an imperative clause that the present price establishment method may be used only in the exceptional cases where it is not possible to apply other methods of price calculation. Price calculation methods are compared in Table 1 below.

Table 1

Price calculation methods and risk allocation in the process of public procurement

No	Price establishment method	Risk allocation principles	Cases of application
1.	Fixed price establishment	Entire risk allocated to the contractor	1) The scope of works to be done can be precisely estimated 2) The contractor can estimate costs and accept the risk
2.	Fixed charge establishment	1) Risk related to scope is allocated to customer 2) Market price (market rate) risk is allocated to contractor	1) The scope of works to be done cannot be precisely estimated 2) The contractor can estimate costs per measurement unit of the object
3.	Coverage of contract implementation costs	Entire risk is allocated to the customer	1) New or non-standard works are performed 2) Other methods of price establishment may not be applied

The contractor's risk (and in some cases the customer's risk) resulting from the market price fluctuation may be reduced by applying price adjustment specified in the Methodology. One of the price adjustment methods specifies that the contract price may be increased (or reduced) taking into consideration certain external macroeconomic factors (inflation etc.). Such price adjustment should be applied to long-term agreements and also in an unstable economic environment.

CONCLUSIONS

Adequate and reasonable allocation of risk and liability in construction contracts has great impact on the value, quality and efficiency of the construction project. The allocation of risks and liabilities between the parties to construction contracts depends on the terms and conditions of the contract, behaviour of the parties to the construction contract, the CC and legal norms stipulated in other sources of the construction law.

The allocation of risk and liability between parties to construction contracts can be analysed using trees of the risk allocation variants.

The article presents tree of variants of the risk allocation for changes in market prices.

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