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Analysis of leading causes of overpriced public building contracts

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Abstract

The list of key drawbacks in financing of public building projects in the Czech Republic was introduced in this paper. The sample of 61 public buildings, constructed between the years 2008 and 2016, was analyzed for the most frequent causes of the delay in construction completion and increase in its final cost, such as wrongly estimated geological conditions for the project realization (type of subsoil, ground water), project documentation of low quality, mistakes in building budget, ambiguous ownership of the land or corruption. The discovered data were compared with the foreign overpriced large-scale public building projects (megaprojects), that are known also here, where additional reasons for increased project pricing were discovered, e. g. Exaggerated ambitions of the politicians, special interests, requirements of ecological and civic activists, etc.

Keywords

Public building project; budget; overprice; megaproject

Introduction

State provides important opportunities for use of public financial tools in the economy by awarding contracts for various public services.  In the Czech Republic (CR) totally 5972 public contracts were awarded in period starting January and ending September 2015, with the total cost of 163 649 millions of CZE (value added tax “VAT” excl.).  The portion of 42.44 % of the total sum was used to finance public building contracts [1]. The management of the state´s public financial resources should be deliberate, with respect to the financial limitations of the state, and should be directed to satisfaction of needs of a broad public. Despite the efforts of the state to control the compliance of the public object construction process, serious mistakes are uncovered repeatedly, e. g. project completion delay, changes in building budget during project realization, insufficient control of the object construction, changes in legislation or political elections, that all may lead to the project overprice and other socio-economical or environmental impacts [2] .

The mentioned facts are not at all the privilege of the CR.  Professor and scientist Bent Flyvbjerg from Oxford´s Saïd Business School, who is engaged in problems of management and financing of large scale projects (megaprojects), says that nine out of ten megaprojects of the world are overpriced, thus only one project is finished on time and without any additional expenses. The general increase of the budget of such project is about 50 % of the total project cost. The reasons for this are various, for example megalomania of politicians, special interests, impact of corruption, requests of ecological and civic activists, but also a failure of investor to sufficiently plan and control the construction project realization [3].

Investment into public building contracts is supposed to serve for improvement of economic situation of given state, in case the rule of “three Es” is followed in the project plan: economy, efficiency and effectiveness.  Efficiency and effectiveness is about the relationships between inputs, outputs and outcomes. Efficiency and effectiveness are not always easy to isolate.

Economy represents value for money and delivering the required service on budget, on time and within other resource constraints. The expenses to cover (human, financial and time) sources are minimal, but their quality, regarding needs of the given activity/goal, is kept.

Efficiency is concerned with getting an acceptable return on the money and resources invested in a public service. Efficiency is defined as work output divided by work input and it is all about getting as much out as possible from the amount put into a system. Efficient project delivers more (of the determined goals) for a given level of resource input than an inefficient one, and the fulfilled goals have expected impact.

Effectiveness describes the extent to which the organization delivers what it is intended to deliver. Effectiveness relates the input or the output to the final objectives to be achieved, i.e. the outcome.  The outcome is often linked to welfare or growth objectives and therefore may be influenced by multiple factors (including outputs but also exogenous 'environment' factors). The effectiveness is more difficult to assess than efficiency, since the outcome is influenced political choice. The effectiveness shows the success of the resources used in achieving the objectives set [4,5].

The key aspects of the increase in the final cost of public projects, awarded and financed by CR from public resources (taxes, funds, etc.) are analyzed in this paper. The sample used consisted of 61 selected public building contracts, awarded by CR among years of 2008 - 2016. The most common causes of delay in project completion and increase in its final cost are reported. The results were compared to the foreign overpriced public building megaprojects, where the reasons of project overprice are well-known (or assumed) and published.

Methodology

For the needs of the analysis of overpriced public building contracts we used a sample of building projects with their final cost in range of 500 thousand Czech crowns (CZE) to 38 milliards of CZE. According to the study of Danish professor B. Flyvbjerg 86 % of all megaprojects, the buildings with final cost of one billion dollars (24, 210 milliards CZE) and up, are not finished on time or their budget is exceeded [6, 7]. Despite the rare occurrence of the projects of such extent and cost in CR, they are sometimes part of the reality also here. Thus these were also included in the sample of totally 61 selected public building contracts. In order to follow the procedure of gathering information about handling the state budget by officials by citizens, we also drew the relevant information (project documentation or comments) from available public resources, such as Publication subsystem [8] or Public procurement and concessions portal [9] of Ministry of regional development of CR; established economic journals, dealing with the area of our interest, such like weekly e-paper Ekonom (i-hned journal), and additional sources – databases of journals with impact factor and other professional literature.

The most important samples of the analysis, regarding to the cost of the object construction, were following: tunnel „Blanka“ in the capital Prague, ZEVO incineration plant in location Chotikov (Pilsen), I/38 Road: Bypass of Kolin, KV arena Karlovy Vary (multifunctional entertainment complex) or Courthouse in Brno. From the foreign megaprojects, the most important analyzed were following: Airport Berlin Brandenburt (Germany), nuclear power plant Flamanville (France), nuclear power plant Olkiluoto (Finland), new residence of European Central Bank (Germany), gas line South Stream (Russia).

Results

On the basis of the investigation of given sample (see Methodology) we observed that the rule of „three Es“ (economy, efficiency and effectiveness) was broken in six cases of ten, leading to project overprice – Figure 1.

**Figure 1**: **The results of analysis for budget increase in given sample of the public building contracts in Czech Republic.** The sample included 61 objects (built in years 2008 – 2016); in total 57% projects were overpriced.

Generally, the problem to maintain the deadline of the project has usually a direct impact on the final cost of the project. Every additional day of constructions, which include additional expenses on salaries, machines, material, etc., increase the financial load of the project. The frequency of the prolongation of public building contracts is depicted in Figure 2. Approximately, the deadline of the project is not kept in four cases of ten.

**Figure 2**: **The results of analysis for time plan overrun in given sample of the public building contracts in Czech Republic.** The sample included 61 objects (built in years 2008 – 2016); in total 44% projects were prolonged and thus overpriced.

The analysis showed that the most important (frequent) causes, leading to overpriced public building contracts, were following:

* Extra work:
* Geological conditions (ground water, soil down throw, type of subsoil)
* project documentation of low quality,
* mistakes in building budget (wrong bill of qualities, omission of items and reserves)
* additional requests of the investor
* Climatic changes (floods, freeze)
* Archeological exploration
* Ambiguous ownership of the land
* Problems with service/material deliveries by subcontractors
* Bankruptcy of subcontractor
* Protests of civic or ecological organizations
* Absence of competitive environment for specific types of building operations
* Corruption (at all levels)
* Legislation (changes of VAT, judicial proceedings)

The resultant causes of budget increase or time plan overrun in case of Czech public contracts is in accordance to foreign public (mega) projects. However, professor Flyvbjerg [7] or engineer Miroslav Sponer [3], expert from Faculty of Economics and Administration at Masaryk University in Brno, mention other possible reasons for the project overprice, such as:

* Exaggerated ambitions of the politicians
* Special interests
* Failure of the investor to plan and control the subcontractors during realization of project
* The way of placing the selection procedure for project by Czech Republic
* Lack of experts committed to the project

Professor Flyvbjerg found that nine public building projects often are overpriced. In our study only six of ten projects fell into this category. This disbalance can be influenced by various factors, for example:

* Different amount of objects between the analyzed samples
* Various project budgets in case of public contracts in CR (500 thousands CZE to 38 milliards CZE) and foreign contracts (megaprojects), where even small mistake in course of the project development can cause striking loss.

Conclusion and discussion

The studied sample consisted of 61 objects/public building contracts awarded by CR in years 2008 - 2016. In total 57% projects were overpriced and 44% projects were prolonged (time plan overrun) and thus overpriced. The reasons were colorful, for example: project documentation of low quality, Problems with service/material deliveries by subcontractors, etc.

Every project must count with all possible problems that can occur at any step of the project execution and include feasible future solutions for them into the project plan. In future projects the proper project documentation should be prepared in advance to avoid budget increase at the early stages of the project. Sometimes important moments for successful completion of the object are missing in the project plan, for example wrong estimation of geological conditions of the land, use of wrong materials or ignorance of safety precautions in given stages of constructions. In other cases the amount of qualified experts working on the project is not sufficient, thus their professional advices/skills are missing, which can lead to lower quality of the project [10]. Low intensity of competition among building companies, soft budget limitations on side of the investor (state) and high extent of corruption have striking impact on increase of building project final cost. Analyzing the sample of selected public building contracts we provided comprehensive information about the main causes of project time plan (deadline) overrun and project budget increase. These information can serve to officials, dealing with the process of evaluation and control of public project plans and their compliance by assigned constructors. It can also serve as manual for preparation of project plans for individual types of buildings, with goal to make the project as much economical, efficient and effective as possible.

Additionally, personal relationship (connection) of key state officials to the assigned project (and its executors) should be prohibited and their behavior regarding the project strictly controlled. Witnesses of corruption at any level of project development, who reported it, should be more protected by state. The officials, authorized to control the project progress, should be assembled to a panel and members of this panel could make a final decision (by voting) about the project only if all were present. Comparison of budget estimated for new building with the budget of standard, already existing, construction of good quality, which was built on time and without increase in its final cost could lead to elimination of budget overestimation. Other tool to control the cost of the public building projects are more strict sanctions of state for constructors, for example by the authority of Office for the protection of competition of CR or Supreme audit office of CR. And last but not least, the responsibility is also on side of citizens. They should be active in learning about the constructions developed with use of public financial resources. However, in this case state should provide better access to details about the projects and their detailed documentation, which is often not the case. Such information are often limited or protected. Another fact are political elections (or changes at key political positions in public sector). Citizens should actively vote for the best candidates in the election period and subsequently control (to possible extent) the behavior of the elected politicians.

Nevertheless, some deviations from original project plan are unavoidable, for example these caused by fluctuations on world business/financial markets, natural catastrophes, or other unexpected complications occurring during construction.

More thorough analysis of the overpricing in field of public building contracts will be the topic of further research.

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