



ACADEMIC YEAR 2011 – 2012

TITLE OF DIPLOMA THESIS:

"Modeling Negotiation for PPP Projects Using Game Theory and Heuristic Methods"

AUTHOR: Marianna Kopsida

ABSTRACT

Public–private partnership (PPP) is a relatively new form of business venture between public sector authority and private parties that is widely used in projects aimed at creating infrastructure and/or providing public services. Therefore, there is a growing research interest over the analysis of the financial and operational risk associated to the PPP projects. The use of complex and precise quantitative methodologies like fuzzy logic and game theory is the latest research advancement in this area that supersedes the qualitative approaches applied in precedent theories. The present report examines the negotiation process, upon the evaluation of the final bids, that takes place between the Owner of the project and the Contractor until an agreement is reached. In PPP projects friction and interfaces between public authority and private parties are very common especially throughout the negotiation process. In our current attempt to analyze the negotiation process between Public and Private sector we reviewed and analyzed existing bibliography that deals with implementation of the game theory on the negotiation process. For the analysis, game theory is chosen which examines situations in which there is an interaction between people and provides simple tools that allow exploring the dependencies between activities. Game theory provides the necessary tools to analyze the interfaces between the PPP parties. Therefore, concepts and procedures in a PPP scenario can be described as a game in which the main players are the public and the private sector. Later on, a model of automated negotiation based on heuristic approach is presented which was found to be applicable in the case of the PPP negotiation, and it is adjusted accordingly.

KEYWORDS

Public-Private Partnership, negotiation, game theory, heuristic method.