

## **TITLE OF MASTER THESIS**

Theoretical Approach of Cost – Benefit Analysis of Infrastructure Projects. The Cost-Benefit Analysis of a Motorway Project

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## **ABSTRACT**

The present dissertation studies the economic, social and environmental assessment of a roadwork project and its feasibility to society and National Growth in terms of its contribution to the implementation of the design of Regional Development Plans. The project in question is the “Improvement of the level of road safety of the THESSALONIKI-POLYGYROS motorway (MOTORWAY 16) - motorway section THERMI- GALATISTA (with an overall length of 23.4 km). The study requires the collection of various types of data regarding all kinds of cost involved and the parameters that affect the environment and society. The processing of the above-mentioned data includes the following stages: 1. Financial analysis, 2. Economic analysis, 3. Sensitivity analysis, 4. Risk analysis. The assessment of the aforementioned investment was conducted based on the following indicators: a) The Net Present Value (NPV), b) The Internal Rate of Return (IRR), c) The Benefit- Cost ratio (B/C ratio). From the analytical estimations we can conclude the following:

- The Financial analysis indicates that there is a need for the European Union to co-finance the project; and in view of the fact that there are no proceeds (tolls), the project is not financially sustainable.
- The Economic analysis produces positive assessment indicators ( $NPV > 0$ ,  $IRR > r$  και  $B/C > 1$ ), which ensures the social and environmental feasibility of the project.
- The sensitivity analysis within the Financial analysis did not produce any critical variable, while the Economic analysis produced only one critical variable (AADT), for which a probabilistic risk analysis followed.
- As regards the AADT and the investment cost (which the qualitative analysis showed to be at high risk), the probabilistic analysis showed that the investment is safe and beneficial for the society considering any possible changes of the aforementioned variables.

## **KEYWORDS**

Cost-Benefit Analysis, road projects, motorways.