Discount rate in Cost Benefit Analysis for Infrastructure projects in Transportation (VSS2003/201)

Diskontsatz in Kosten-Nutzen-Verfahren für Verkehrsinfrastrukturinvestitionen

Funding: National (Switzerland)
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Status: Complete with results

Background & policy context:
A discount rate is used to convert flows of costs and benefits over time into a net present value. There are two reasons for doing this. The first is to determine whether a project is worthwhile. The second reason is to compare several projects that achieve the same objective but have different timeframes. The use of discounting enables the different cost and benefit flows to be converted into a single net present value number for decision-making.

Objectives:
The main objective of the study is to derive a discount rate for cost benefit analysis for infrastructure projects in transportation in Switzerland. In a first step the theoretical background of the discount rate will be described and the most important models and approaches for calculating the discount rate will be discussed.

Methodology:
The methodology of research is based both on theory and on the results of current research and modeling approaches, with a necessary adaptation to Swiss standards.

Parent Programmes:
ARAMIS - ARAMIS information system

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Partners:
Switzerland
Swiss Federal Roads Office
Rapp Trans AG

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Key Results:
As part of the present research study, and for the first time in Switzerland, an econometric estimate was made of the discount rate which should be considered when evaluating public infrastructure projects.

The first part of the report describes the theoretical background to the problem of discount rates and
their inclusion in cost-benefit analyses. During the evaluation of the relevant literature on economics it became clear that whilst theoretical understanding is relatively old, the empirical econometric studies in this area are surprisingly young.

The literature on economics contains two concepts for the discount rate:

- The social time preference rate and
- The social opportunity cost rates

The first is also known as the consumption interest rate. This expresses how many units of "consumption tomorrow" can be expected from the consumers if they are deprived of a unit of "consumption today". In a two-period analysis they correspond with the threshold rates for the substitution of consumption between two points in time minus 1.

The social opportunity cost rate measures the return on a marginal (i.e. non-average) project; it measures the threshold rate of return of private investments.

The majority of economists who have studied this problem are of the view that the correct discount rate for public investments is the social time preference rate. Indeed their arguments are quite logical: The intention behind every investment is to increase future consumption and this means giving up some consumption today.

Given the favorable situation in terms of available data, the social time preference rate is also much simpler and easier to estimate than the social opportunity cost rate.

This concept is also becoming increasingly used in the EU, for example in Great Britain or France, whereby most of the empirical analyses have been carried out in Great Britain.

The present study only pursued this concept.

Documents:
- 21140_1137_Inhalt.pdf (Final report)

STRIA Roadmaps: Other specified
Transport mode: Rail transport
Transport sectors: Passenger transport, Freight transport
Transport policies: Societal/Economic issues
Geo-spatial type: Other