

Master's Thesis Abstract

Student ID Number: 21GH302

Name:

The Graduate School of Humanities and Social Sciences

Itsuki Suzuki

Major Program / Course :

• Policy Science Course

Title

Empirical Analysis of Road Investment in Rural Areas and an Alternative Approach to Road Maintenance

Many infrastructures in Japan were built intensively during the period of rapid economic growth. As a result, it is predicted that many infrastructures require maintenance in the future. Needless to say, the cost of infrastructure maintenance is covered by taxes. It is difficult to improve all the infrastructures in rural areas as the population is declining and the public finances are becoming tight.

This research was conducted for two purposes: (1) analysis of past road construction projects in Japan, and (2) proposal for an alternative approach to road maintenance.

The analyses of past road construction projects in Japan were conducted in two approaches.

First, we analyzed the data of the policy evaluation. Cost-benefit analysis has been used since 1998 as a means of policy evaluation in Japan. A cost-benefit analysis is a way of comparing the projected costs and benefits related to a project decision about reviewing whether the project is efficient or not. The data have been published by the government. The data were tabulated and analyzed to determine the effectiveness of the introduction of cost-benefit analysis for infrastructure improvement issues. The issues regarding infrastructure improvement are as follows: (1) overbuilding of infrastructures, (2) financial impact, and (3) efficiency. The results of this analysis showed that the introduction of cost-benefit analysis was effective in reducing over-maintenance and saving money. (chapter1)

Second, we analyzed past road investments. This analysis is intended to identify past policy determinants. In literature, the analysis of public projects has focused on political patronage but has not reached any consistent conclusions. Therefore, in this research, we conducted a panel data analysis of public project investment from the perspective of Social Efficiency and Spatial Equity. The analyses targeted road investments in projects under direct control and projects of subsidies from 1980 to 2017 and were also conducted in the periods before and after the introduction of cost-benefit analysis. The analysis revealed that Spatial Equity in projects under the direct control and Social Efficiency in projects of subsidies has been emphasized. (chapter2)

The proposal for an alternative approach to road maintenance was suggested based on an estimation of 1.5-lane road construction. 1.5-lane road construction is a maintenance approach that combines 1-lane and 2-lane road construction to suit local situations. However, in this research, we considered the 1.5-lane road construction as an approach to improving the 1-lane in the center of a 2-lane road. The estimation is made using a cost-benefit analysis.

The costs and benefits of the 2-lane road constructions and the 1.5-lane road constructions are calculated, and the net costs and net benefits of the 1.5-lane road constructions were determined to measure the effect of the construction. The net costs were represented as a benefit since it is a decrease in a cost while the net benefits were represented as a cost since it is a decrease in a benefit. The analyses targeted roads with the low-volume road in Aomori Prefecture and estimates were made for 93 sections. As a result, it was found that the 1.5-lane road construction would bring a total net benefit of about 48 billion yen and a net benefit of about 40,000 yen per capita in Aomori Prefecture. (chapter3)