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"A Note on Fiscal Policy for Highway Systems – How to Price and Invest
in Highway Facilities and Operation"

A shortfall in highway funding in the U.S. is forcing highway agencies
to search for more viable financing options. This will likely lead to
reforming of fiscal policy for highway systems. A sound highway fiscal
policy comprises two components: generation of adequate revenues
through
efficient pricing and taxation mechanisms, and allocation of available
resources in an efficient and equitable way. The present study first
synthesizes the state-of-the-art and the state-of-the-practice of the
subject, and then makes suggestion on how to improve the situation. The
first part of the subject—how to price transportation system—entails
questions on whom and what activities to charge and how much the price
level should be. One might argue that the current fuel-tax-based
financing mechanism has served to sustain highway funds for many years.
However, its limitations are found with regard to adequacy of the
revenue received and impacts on system efficiency and equity. By
contrast the self-financing highway system suggested in the present
study seeks maximization of system efficiency (i.e., aggregate social
benefit) by charging each user for what one is responsible. By
conducting highway cost allocation study, this study suggests a
usage-based pricing scheme that self-finances a highway system by
having
separate rates by geographical location, facility type, and vehicle
classification. In the second part the questions on how much to invest
in a highway system are raised. This study's econometric models explain
relationships between highway expenditures and highway performances,
using 10-year highway expenditure (by program, state, and highway
functional class) and performance data (pavement quality index and
fatality) in the U.S. Results provide new insights into the current and
historical effectiveness of highway expenditure. Based on the
statistical evidence, a framework to assess highway needs, which is
complementary to the prevailing methodologies, is suggested. The
suggested framework estimates required highway investments with which
the target level of highway performance can be met. To conclude, the
present study discussed issues and challenges that are critical in
implementing the suggested analytical solutions in the real world.