



Choosing Rural Road Investments to Help Reduce Poverty

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Summary. — The paper first critically reviews past and current practices in how rural road investments are selected. An attempt is then made to develop an operational approach that is grounded in a public economics framework in which efficiency and equity concerns are inseparable, information is incomplete in important ways, and resources are limited. A key problem addressed is that a potentially important, though unknown, share of the benefits to the poor from rural roads cannot be measured in monetary terms. The proposed method aims to identify places where poverty, inaccessibility and economic potential are high. The method is illustrated for Vietnam. © 2002 Elsevier Science Ltd. All rights reserved.

Key words — rural roads, poverty, evaluation, Southeast Asia, Vietnam

1. INTRODUCTION

It is widely agreed that the economic appraisal of development projects should help select projects that contribute most to social welfare. The chosen projects should yield larger gains in social welfare than alternatives. Put in such general terms, the objective is clear enough. But its implementation, and particularly how to measure net benefits, are rarely so clear. This paper focuses exclusively on the appraisal and selection of investment projects in the rural roads sector, where the specific objective is taken to be poverty reduction. This is broadly defined to include relevant non-income dimensions of welfare. How one might go about choosing between road investments is discussed in general terms with some specific illustrations from current work in Vietnam.

A vocal group of rural road enthusiasts has claimed that rural roads result in significant social benefits. Since these are difficult to quantify, they have typically been omitted from conventional appraisal techniques. It is further argued that this has led to longstanding biases against rural road projects and (since the poor are primarily rural) that there are biases against pro-poor investments. As a remedy, special techniques have been devised for evaluating and selecting rural road projects that simply take the eventual flow of important social benefits as given. Unfortunately, there is as yet

little convincing empirical evidence that rural roads affect social outcomes beyond what they would have been without the road. Although the argument that high social benefits will ensue is sometimes plausible, the evidence provided in justification is rarely so. Without better evidence, there can be no presumption that such benefits will be high or even positive.

Given the poor quality of what we do know in this area, there appear to be two solutions. The first is to simply halt all rural road construction that does not pass conventional cost-benefit rates of return criteria and wait until unambiguous empirical evidence is available. Past experience does not suggest that this option will be favored. Decisions continue to be made with imperfect knowledge and that is not

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likely to change here. The second option is to improve on what is currently done and come up with a coherent, internally consistent evaluation methodology that explicitly says how much lower a rate of return to measured benefits one is willing to accept, and to test that with subsequent research. The point of this paper is not to decide which solution should be chosen but rather, to try to lay out the foundation for the second. The paper argues that there should be research on two fronts simultaneously. Special efforts need to be directed at measuring the existence and magnitude of the so-called social benefits from rural roads. At the same time, work needs to be done on improving the methods widely used to appraise and select rural road projects in the absence of that evidence.

To this end the paper proposes an alternative approach. The proposal recognizes explicitly that an important problem for some types of public spending, including rural roads, is that there is a potentially sizable share of the benefits that cannot be measured in monetary terms so as to be aggregated consistently with monetary measures of other benefits and costs. But, research should at least be able to provide an assessment for a few selected cases, which can provide a benchmark. There are participatory methods for tapping local information to form judgements of the relative importance of different types of benefits in a specific setting. The proposal tries to use the information available to form a second best appraisal method, taking account of the informational constraints faced in practice.

In the following sections, the paper argues that a change in the transport sector's current approach to rural road investment selection is warranted along the lines described, building on some of the poverty-focused "hybrid" methods found in recent rural road appraisals at the World Bank and elsewhere. The paper first critically reviews the methods typically used for selecting roads, both conventional cost-benefit analysis (Section 2) and the more recent hybrid methods which combine cost-benefit methods for some projects with cost-effectiveness calculations for others (Section 3). Section 4 discusses efforts at quantifying typically excluded benefits. This is followed, in Section 5, by an examination of the relevance of the traditional approach in the context of a poor rural economy, using Vietnam to illustrate the points made. Survey data are used to test the approach's underlying assumptions. The

paper then proposes an alternative approach. Section 6 sets out the problem to be solved. Section 7 presents the proposed methodology and Section 8 looks at implementation. The paper ends with some concluding comments.

2. TRADITIONAL COST-BENEFIT ANALYSIS OF ROADS

There is some research on the importance of infrastructure, and in particular road infrastructure, to agricultural output, economic growth and poverty reduction (including Antle, 1983; Binswanger, Khandker, & Rosenzweig, 1993; Fan & Thorat, 1999; Jacoby, 2000; Jalan & Ravallion, 2002). For example, Jalan and Ravallion (2002) found that road density was one of the significant determinants of household-level prospects of escaping poverty in rural China. It is far from clear, however, that existing methods of project appraisal for rural roads will properly reflect the potential benefits to the poor.

Cost-benefit analysis methods for appraising investments in the road infrastructure sector were first developed for roads in more urbanized, high-traffic density areas, drawing on methods from a developed country literature on road appraisal. Traditionally, road investments in World Bank financed projects have been selected based on benefit indicators derived from consumer surplus calculations of road user savings, comprising both of vehicle operating cost savings and journey time savings. Forecasts of traffic demand—reflecting both normal growth in traffic and that generated by the project—are used to derive willingness to pay estimates to proxy project benefits. Over time, the approach has been implemented at different levels of sophistication, anywhere from only considering benefits accruing to motorized four-wheel vehicles to also including gains to nonmotorized traffic and pedestrians based on reduction of travel time savings. In some cases, estimates of the value of agricultural production increases induced by the road investment are also included.¹ The appraisals have generally not made distinctions between beneficiaries from different income or other socioeconomic groups.

A number of criticisms have been leveled at this approach (Gannon & Liu, 1997; Hine, 1982). One is that it tends to bias investments toward richer areas since the demand for traffic

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