Valuation of Travel Time Savings: Empirical studies in Bangladesh, Ghana and Tanzania and a practical model for developing countries
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This brief summarises three studies (Bangladesh, Ghana and Tanzania) undertaken with Department for International Development, UK, financial support (Knowledge and Research Grants, 2001-5)

The challenge

Despite the importance given to value of time savings in economic appraisal of transport projects in developed countries, the practice is much less common in developing countries, especially for rural projects. This is partly because there have been few studies to test the applicability of conventional approaches for estimating the value of travel time savings in developing countries and partly because of low priority given to rural people's time savings. Consequently, vehicle operating cost savings are the main economic benefit included when appraising rural transport projects. This biases investment decisions in favour of urban and inter-urban projects especially if travel time savings are included in the appraisal of those projects.

If reliable estimates of the value of rural people's time savings can be obtained, the case for including these savings as benefits in appraising rural infrastructure projects would be strengthened. Inclusion of time saving benefits in appraising rural projects would help in (a) redressing the bias against rural infrastructure investment and, (b) supporting the case for more pro-rural and pro-poor infrastructure development.

The studies in rural Bangladesh, Ghana and Tanzania have been undertaken to assess how far it is possible to determine value of time savings in rural situations in developing countries using standard methods normally used in developed countries. The challenge was to develop a method which can take into account the diversity of rural work and subsistence patterns, time use and multi-purpose travel and yet yield values which are robust and simple enough to use in routine economic analysis.

While augmented wage rate is used to value of working time, willingness to pay to transfer travel time savings to leisure activities are generally used to establish the value of non-work related travel time savings. Where regular wage employment is the exception rather than the rule, as in rural economies in developing countries, it is necessary to widen the definition of work related trips and to adopt the willingness to pay concept to non-work trips. Preference ranking methods (Revealed Preference and Stated Preference), which are based on the assumption that a traveller makes trade off in favour of time at the expense of money, were tested in these studies. Revealed Preference is generally regarded as the more reliable approach as it estimates value of time savings based on actual mode choices made by travellers (e.g. between the faster but more expensive motorcycle-taxi and the slow but cheaper bus). Stated Preference provides respondents with hypothetical transport choices and requires them to state what they would be willing to pay for the alternative modes based on the utilities they would derive from those modes.

What worked?

The Bangladesh study demonstrated that the conventional 'Stated Preference' method is suitable for valuing the time of rural road users. With sufficiently clear questions related to transport modes and travel conditions respondents were familiar with, the Stated Preference method produced robust and plausible results. Revealed Preference, on the other hand, failed to generate consistent results because the transport options available to rural travellers' were very limited, and actual travel times for public transport services were subject to large fluctuations and difficult to estimate reliably since public transport modes do not operate to schedule but set off when they are full. The subsequent African studies confirmed that the Stated Preference approach also works in entirely different rural contexts. The Revealed Preference method faced problems similar to those in Bangladesh because of even more limited transport options.

Base values of time savings and adjustments for personal and travel characteristics

The average base travel time saving values for rural travellers in three countries were: Taka 3.50 per hour (US$ 0.06) for Bangladesh, Cedi 1,627 per hour (US$ 0.18) for Ghana and TZS 195 per hour (US$ 0.18) for Tanzania. These base values were 51%, 64% and 49% respectively of the rural wage rate in study areas of Bangladesh, Ghana and Tanzania. In addition, the studies investigated whether weightings should be applied to the base rates of time valuation to reflect selected personal and travel characteristics. The significance of each characteristic (e.g. whether the value of time would be different from the base value and by how much) is shown in the table below.

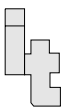
Variable	Bangladesh (2001)	Ghana (2004)	Tanzania (2004)
Gender	Women 52% lower than men	Women 12% lower than men	Women 17% lower than men
Child/adult	Not tested	Child 21% less	Child 48% less
Poor/non poor	Poor 9% higher	Poor 11% less	Poor 43% less
Market day/non market day	Market day 42% higher	Not significant	Not significant
Travelling with/without load	With load 14% higher	Not significant	Not significant
Comfort/discomfort	Comfort 63% higher	Comfort 85% higher	Comfort 56% higher
Essential /non essential travel	Not significant	Not significant	Not significant
Good roads/poor roads	Not significant	Not significant	Good roads 26% higher
Fixed income employee/ non-employee	Employee 400% higher	Employee 93% higher	Not significant
Rainy/dry season	Not significant	Not significant	Not significant

The three studies also confirm the importance of qualitative enquiry methods in the research design to help develop the Preference questionnaires and contextualise and give meaning to the analysis results. For example, focus group discussions provided possible reasons for value of time savings on market days in Tanzania and Ghana not being higher than on non market days. In the survey localities, there were numerous markets within short travelling distances and travellers preferred to save money rather than save small amounts of time.

The studies also demonstrate the successful use of pictorial material for clarification of transport options for both illiterate respondents and those who never experienced some of the options.

Conclusions

- The Stated Preference technique to estimate '*willingness to pay*' for time savings is applicable in rural communities in developing countries where a significant proportion of people are poor, many are illiterate and most are engaged in subsistence and diverse economic activities.
- Rural travellers do not make a distinction in the valuation of time between 'essential' travel and social/leisure travel. This signifies the importance social and leisure trips that are undertaken to accumulate social capital.
- Inclusion of valuation of children's travel time is important because the time constraint on children affects the trade-off between children's economic contribution to households and school attendance.
- Although women's value of time rates are lower than men's, caution needs to be exercised in applying weighted adjustments in economic analyses as the value attributed to women's time may be less than its true cost due to cultural norms.
- The results of these studies should not be regarded as fully representative of the situation in other countries. Ideally, context specific research is needed in each country. In the absence of such research, the results provide empirical justification for including time saving values in project appraisal in other countries and broad estimates which can be used where local studies are not feasible.
- Value of time savings as a benefit is not confined to transport projects. It is also important for other infrastructure investments such as markets, post harvest production facilities and water pumps where travel and waiting time savings may be a major benefit to users.



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