

Valuing Changes in Time Use in Low and Middle-Income Countries

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Development Projects -> Households' time allocation

- 1) Households may be affected **positively** (reduced travel time to collect water); or
- 2) Households may be affected **negatively** (may be displaced by a project and need to travel farther to reach schools, markets)

Benefit estimation ...

Multiply “time saved” (hours per month) by “shadow value of time” (**VOT**)...

Benefits per month = [Hours saved per month] x **VOT**

What is **VOT**?

Value of time (**VOT**): Two Observations

- 1) Likely to vary across activities (sectors)
- 2) Heterogeneity across individuals engaged in the same activity

Industrialized countries: For time use changes during the work day for salaried employees

Recommendation No. 1 (based on theory):

Use before-tax market wage data to estimate the value of time, including employees benefits and indirect costs of employee supervision.

Industrialized countries: For time use changes outside the 8-hour (salaried) work day

If individual can tradeoff time and work ...

Recommendation No. 2 (based on theory):

Use after-tax market rate

If individual cannot tradeoff time and work ...

Recommendation No. 3 (based on empirical evidence):

Use 50% of the after-tax market wage for VOT

Use 100% of after-tax wages for walking

Use 125% of after-tax wages for waiting (queuing)

Where do these recommendations come from?

Two nonmarket valuation approaches have been used:

- 1) Revealed preference (e.g. travel cost)
- 2) Stated preference (e.g. contingent valuation)

Time Profile of Activities: 24-Hour Day

Period 1 (9:00 am – 5 pm) - Salaried Employment → **use the average household before-tax market wage rate + benefits + costs of employee supervision as VOT**

Period 2 (5:00 pm – 10 pm) – Time Outside Salaried Employment but with opportunity to trade for income-generating activities → **use the average household after-tax (i.e. take home) wage rate as VOT**

Period 3 (10:00 pm – 9:00 am following day) – Time outside salaried employment, but no opportunity to trade for income-generating activities → **Need empirical estimates of VOT**

What's different about developing countries?

- 1) More activities outside the formal sector → empirical estimates of **VOT** more important (less reliance on theory)
- 2) Fewer, lower taxes on income → distinction between before and after-tax wages is less important
- 3) Data on time savings and wage rates may be harder to obtain from secondary sources → greater need for some primary data collection

We reviewed 10 papers that estimated the **VOT** in developing countries ...

- All but two were published in the last 10 years
- Five of the studies are from countries in Africa (3 of these from Kenya), four from Asia (2 of these are from China), and one from Latin America (Costa Rica).
- Five used revealed preference methods, three used stated preference methods, and two used both.
- Four report **VOT** estimates for the transport sector (value of time spent commuting), and four report **VOT** estimates for the water supply sector (value of time spent collecting water).
- Five were conducted in large urban areas, four in rural areas, and one in a small town.

Findings from the literature review of studies from developing countries ...

- 1) Surprising consistency in the **VOT** results - eight of the ten studies report mean **VOT** estimates that fall in the range of 25-75% of some measure of household income or wage rate.
- 2) No systematic differences in **VOT** estimates from stated versus revealed preference methods.
- 3) Little evidence of the **VOT** for waiting

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A Simple Stated Preference Tool for Estimating the Value of Travel Time in Rural Africa

For Primary data collection – Use Stated Preference Approach

	New water point A	New water point B	Your current source
Total time to walk to source, wait, fill container and return home	10 minutes	5 minutes	(Time and cost as reported by respondent)
Cost per 20L jerrican	1 Ksh per 20L jerrican	0.25 Ksh per 20L jerrican	

Recommendations

Step 1 - see if the majority of time changes are being devoted to income generating activities → **use the average household after-tax (i.e. take home) wage rate as the value of time**

Step 2 – if most of the time savings are not devoted to income-generating activities → **do a sensitivity analysis to see if VOT between 25-75% of the after-tax market wage has a significant effect on the results of the benefit-cost analysis. If not, primary data collection is probably not warranted.**

Step 3 – If changes in the values of VOT between 25-75% do affect the results → **consider doing primary data collection to estimate VOT**

Step 4 – If the distribution of benefits and costs is especially important in the benefit-cost analysis → **consider doing primary data collection to estimate heterogeneity in the VOT across households**

THANK YOU!