Valuation and Incentive Measures for Sub-Saharan West Africa

Revealed Preference Based Methods

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Sub-Regional Workshop, Ouagadougou, 14-17 May 2013

Key take home message:

- Suppose an **economic relationship exists** between **purchasing some marketed goods and services** and use of a **non-market good**.

- **Example**: an economic relationship may exist between **expenditure on fishing equipment** and **participating in recreational fishing**.

- Under such circumstances, it is possible to use **revealed preference approaches** for the economic valuation of non-market goods and services.

Key questions addressed in this lecture:

i. What are **revealed preference approaches** to the valuation of non-market goods and services?

ii. Which **economic principles underlie the application** of such approaches to non-market valuation?

iii. What **steps** are involved in their **empirical application**?

iv. What are the **advantages** and **disadvantages** of these approaches?

Key questions addressed in this lecture:

v. A **detailed discussion** on the **Travel Cost Method (TCM)**.

vi. A **practical demonstration** on the **Travel Cost Method** (for anyone interested) after the discussion.

References:

- I used many references to compile this lecture including:
- **TEEB for National and International Policy Makers Chapter 4**: Integrating Ecosystems and Biodiversity Values into Policy Assessment.
- **TEEB Ecological and Economic Foundations Chapter 5**: The Economics of Valuing Ecosystem Services and Biodiversity.

Revealed Preference Approaches:

- These approaches to **non-market valuation** are based on **observing individuals** make choices **in real markets** that have an **economic relationship** to the ESS to be valued.

- **Example**: we would like to estimate the **recreational value of wildlife viewing** in Lake Nakuru National Park (Navrud and Mungatana, 1994).

- **Wildlife viewing is a non-marketed good** (a normal market for WL viewing does not exist).

Revealed Preference Approaches:

- **Idea**: base the valuation on observing visitors going to the park **purchasing marketed goods related** to their **experiencing wildlife viewing**.
- **Example of goods**: gasoline, time, entrance fees etc
- Visitors would only incur such expenditure if ...
- The valuation of the non-market good or service is based on **surrogate markets**.

Revealed Preference Approaches:

- **Revealed preference approaches** are also called **indirect methods** of non-market valuation (we do not value the non-market good **directly**, we only value it through a **surrogate market**).

- The **two main methods** within this approach:

i. Travel Cost Method (TCM), and

ii. Hedonic Pricing Method (HPM).

Steps in Revealed Preference Valuation:

i. Determine whether a **surrogate market exists** that is **related** to the ESS to be valued.

ii. Select the **appropriate method** for economic valuation (should I use **TCM** or **HPM**?).

iii. Collect **market data** to estimate the **demand function for the good in the surrogate market** (in our example, estimate a **demand function** relating **travel cost** to **visitation** in the park).

Steps in Revealed Preference Valuation:

iv. Use **econometric techniques** to infer the value of a change in the quantity or quality of the non-market good or service from the **estimated demand function** (e.g. how will I respond when the price of recreation increases?) **This will be the value of the non-market good or service**.

v. Aggregating values across relevant population.

vi. Discounting values where appropriate.

Advantages of Revealed Preference Methods:

- They **appeal** to many economists because they rely on **actual** or **observed behaviour** in markets (economic theory gives credence to data obtained from observing people make real choices in real markets).

- Many economists **readily accept** values produced by these methods as **being useful for environmental policy making**.

Disadvantages of Revealed Preference Methods:

- **Main disadvantages**:

i. **Inability** to estimate **non-use values**, and

ii. **Dependence** of estimated values on **technical assumptions** made on the relationship between the non-market good/service to be valued and the surrogate market good.

- In addition, **market imperfections** and **policy failures can distort** the estimated monetary value of the non-market ecosytem services.

The Travel Cost Method

The Travel Cost Method:

- Method is mostly relevant for determining **recreational values** of ESS and biodiversity especially at a given site (e.g., recreational value of wildlife viewing).

- It could also be used to assess the **value that might be at risk if such a site were to be damaged** and hence **made unavailable** for recreation.

The Travel Cost Method:

- Based on the rationale that **recreation** at a given park is associated with a **cost** (direct expenses and opportunity costs of time) that the visitor or recreationist is willing to accept so as to enjoy the recreation.

- **Idea**: I would not have incurred the given level of expenditure if I did not think travelling to the park only for recreation is **at least** worth the time and money I spent (if this is not true and I was not coerced, I would never have gone to the park).

The Travel Cost Method:

- Exploit the **economic relationship** that exists between **monetary expenditure** (opportunity cost of time + travel cost + entry fee + etc.) and **recreation,** to **value** the non-market good "**recreation experience**" using **econometric techniques**.

- The **value of a change** in the quantity or quality of a **recreational site** can be **inferred** from the estimated **demand function** for visiting that site.

The Travel Cost Method:

- **Example**: you could estimate an **econometric relationship** between **demand for recreation** in a park and **entry fee**.

- Then use the estimated demand function to **hypothetically infer** how demand for recreation decreases as the entry fee is increased.

- This relationship can enable you estimate the recreational value of a park (**this is what I did in Lake Nakuru NP**).

Uses of TCM Results:

- The results could be used for estimating:

i. A **monetary measure** of the **utility** of the recreational amenity with **free access**,

ii. The **effects** of introducing **access fees** on visits, and

iii. The **effects** of **hypothetical changes** in price on visits.

A Practical Exercise in the Application of the Travel Cost Method.

Message to Participants:

- I have a practical example of how to implement the Travel Cost Method if any one is interested in a demonstration.