The Index of Sustainable Economic Welfare (ISEW)
Outline

- The ‘Threshold Hypothesis’
- The Index of Sustainable Economic Welfare (ISEW)
- The ISEW for Belgium
- Discussion
- On the future of the ISEW
Threshold Hypothesis

Introduction

• Lately, concerns that the costs of extra economic activity would outweigh the additional benefits are frequently voiced by EEists.

• Threshold Hypothesis (Max-Neef, 1995):
  – “For every society there seems to be a period in which economic growth (as conventionally measured) seems to bring about an improvement in the quality-of-life, but only up to a point - the threshold point - beyond which, if there is more economic growth, quality-of-life may begin to deteriorate.”
  – evidence: based on the Index of Sustainable Economic Welfare (ISEW)
• Index of Sustainable Economic Welfare (ISEW): a measure that tries to capture the overall impact of economic activity on human welfare

• Cost Benefit Analysis:
  – uncancelled costs
  – uncancelled benefits
Threshold Hypothesis
Optimal Physical Scale (1)

Panel 2.5a.

Uncancelled benefits (UB), Uncancelled costs (UC) and Sustainable economic welfare (SEW)

Physical scale of macroeconomy

UC

UB

SEW

S*

S_0

0
Threshold Hypothesis
Optimal Physical Scale (2)

Panel 2.5b

Sustainable economic welfare (SEW)

SEW*

SEW*

0  S*  S_S  Physical scale of macroeconomy
Threshold Hypothesis
The ISEW for the UK
Threshold Hypothesis

The ISEW for the US

![Graph showing the relationship between GNP/capita and ISEW/capita from 1950 to 1990. GNP/capita shows a steady increase, while ISEW/capita remains relatively constant.]
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ISEW
History

• Developed by Herman Daly and John Cobb in 1989 based on:
  – previous efforts (MEW, EAW)
  – insights from criticism on traditional indicators such as GDP

• Methodological update in 1994 and rebranding in 1998 (Genuine Progress Indicator - GPI)
ISEW
Underlying Model

• ISEW is made up of two elemental categories:
  – unc cancelled benefits: ‘net psychic income’ as defined by Fisher (1906) -> psychic services from wealth creation minus the associated psychic disservices
  – unc cancelled costs: loss of natural capital services

• Based on a Linear Throughput Model (LTM)
ISEW
Linear Throughput Model

4. Natural capital (ECOSPHERE)
   (sole provider of source, sink, and life-support services)

1. Net psychic income

2. Human-made capital (ECONOMY)

3. Throughput

   Resources in (production)
   Waste out (consumption)
   Recycling

4. Natural capital

5. Lost natural capital services

Heat loss (−)

Non-renewable source

Renewable source

Solar flux (+)

SUN

= low entropy resource flow

= high entropy waste flow

= psychic (non-physical) flows

1. net psychic income

2. human-made capital

3. throughput

4. natural capital

5. lost natural capital services
ISEW Methodology (1)

- ISEW =
  - private consumption expenditures
  - losses from income inequality (-)
  - value of domestic labour (+)
  - non-defensive public expenditures (+)
  - defensive private expenditures (-)
  - capital adjustments (+/-)
  - costs of environmental degradation (-)
  - depreciation of natural capital (-)
ISEW Methodology (2)

• Implementation
  – calculations: >20 adjustments are made to the index base (private consumption expenditures)
  – monetary aggregation
  – ISEW is expressed in constant prices (using the GDP deflator)
  – results depend very much on the assumptions made within the methodological framework of the index
• The ISEW is a comprehensive measure of current economic welfare
  – economic welfare: contribution of the economic system to our overall level of human welfare
  – current: no element of sustainability
  – comprehensive: based on a linear throughput model
• Traditional measure of economic welfare = Gross Domestic Product (GDP)
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The ISEW for Belgium

Setting

• ISEW calculated for Belgium
  – 1970-2006
  – data obtained from numerous sources
  – Jackson et al. (1997) was taken as a starting point for the analysis
  – list of items
  – graphs
  – conclusion
The ISEW for Belgium

Items (2)

- private consumption expenditures (+)
  - from national accounts

- welfare losses from income inequality (-)
  - using the Atkinson index

- value of domestic labour (+)
  - data taken from time use studies + number of hours worked multiplied by shadow price (wage rate of cleaning personnel)
The ISEW for Belgium
Items (2)

- **non-defensive public expenditures (⁺)**
  - defensive expenditures = expenditures that are made to offset a decrease in welfare
  - half of public expenditures on health and education

- **defensive private expenditures (⁻)**
  - costs of commuting
  - private costs of pollution control
  - costs of car accidents
  - costs of noise pollution
The ISEW for Belgium

Items (3)

- costs of environmental degradation – ST (-)
  - costs of water pollution
    - rescale US cost estimate + use surface water quality index to spread estimate over time
  - costs of air pollution
    - emissions of 5 air pollutants are valued at their marginal social costs (estimates)
The ISEW for Belgium

Items (4)

• costs of environmental degradation – LT(-)
  – costs of climate change
    • cumulative emissions of CO₂ (since 1900) are valued at estimates of their marginal social costs (fluctuates through time)
  – costs of ozone layer depletion
    • cumulative consumption of CFCs in Belgium are valued at a constant cost per unit estimate
The ISEW for Belgium

Items (5)

- natural capital depletion (-)
  - loss of farmlands
    - quality and quantity
  - depletion of non-renewable resources
    - consumption for non-renewable energy resources are valued at a replacement cost estimate (renewable substitutes) + escalation factor
    - oil, natural gas, coal and nuclear energy
The ISEW for Belgium

Items (6)

• **capital adjustments (+\-)**
  
  – *durable consumer goods*
  
  – *net capital growth*
    
    • taking into account depreciation and changes in the labour force
  
  – *changes in net international investment position*
    
    • compares debts and loans to other countries
    
    • sustainability requires long-term self-reliance

• **result: ISEW and ISEW/capita**
The ISEW for Belgium
Results (1)

ISEW - 2006 Update

GDP/capita
ISEW/capita

ULB - Ecological Economics
25/04/2008 | pag. 24
Positive Items

The ISEW for Belgium Results (2)
The ISEW for Belgium
Results (3)

Negative Items

Losses from Income Inequalities
Defensive Private Expenditures
Costs of Environmental Degradation (ST)
Costs of Environmental Degradation (LT)
Natural Capital Depletion
Conclusions

- GDP/capita: almost continuous increase over the entire period 1970-2006
- ISEW/capita:
  - two longer periods of increases in ISEW/capita, ended by shorter periods of drastic decline
  - first period of recession (mid 1980s): decrease in net capital growth
  - second period of recession (early 2000s): decrease in Belgium’s net international investment position and increasing costs of non-renewable energy consumption
- Threshold hypothesis: recent period of decline is not long enough to draw solid conclusions on the hypothesis
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Discussion
ISEW - General

• Strengths
  – more comprehensive approach to measuring economic welfare
  – valuable insights + empirical translation of the criticism on GDP as a measure of economic/human welfare
  – first step towards a new way of economic measurement?
  – communication tool

• Weaknesses
  – which items are taken into account?
  – high sensitivity
  – criticism on methodology and on valuation methods
  – inconsistencies
Discussion
Critical Analysis

• methodology has not changed much since 1994

• theoretical framework (Lawn)

• methodological criticism (Neumayer)
  – inconsistency: the ISEW cannot be both an indicator of current welfare and one of sustainability
  – ISEW is certainly not an indicator of strong sustainability
  – index and methodology are subjective
Discussion
Critical Analysis (2)

• practical:
  – several valuation methods have been strongly criticized over the years (natural capital depletion, long-term environmental degradation, ...)
  – compilation requires a lot of data

• Neumayer (2000): the growing discrepancy between GDP/capita and ISEW/capita “might be the artifact of highly contestable methodological assumptions”.
Discussion

Possible Answers

1. Updated methodology
   - to increase consistency with the theoretical framework of the index
   - to incorporate more recent valuation methods
   - result: ISEW/capita (adjusted)

2. A Simplified ISEW
   - only quantitatively most important items are taken into account
   - result: SISEW/capita
Discussion
Updated Methodology (1)
• Results:
  – non-decreasing ISEW/capita over time
  – fall in the growth rate of ISEW/capita (early 1980s) can be explained by
    • A growing income inequality
    • A rise in the costs associated with long-term environmental damage
  – underline the importance of underlying assumptions + stress the need for a consistent set of items and valuation methods
  – Artifact?
### Discussion

**A Simplified ISEW (1)**

<table>
<thead>
<tr>
<th>ITEMS</th>
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<td>Personal Consumption Expenditures</td>
<td>+</td>
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<td>Losses from Income Inequality</td>
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<td>Value of Household Work</td>
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<tr>
<td>Public Expenditures Health &amp; Education</td>
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<td>Costs of Commuting</td>
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<td>Costs of Air Pollution</td>
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<td>Natural Capital Depletion</td>
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<td>Costs of Climate Change</td>
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<td>Costs of Ozone Layer Depletion</td>
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<td>Net Capital Growth</td>
<td>+/-</td>
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<tr>
<td>Change in NIIP</td>
<td>+/-</td>
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Discussion
A Simplified ISEW (2)
Discussion
A Simplified ISEW (3)

• Conclusions:
  – easier compilation
  – outcome of the exercise remains unchanged (trend over time)
  – highlights the items that most urgently need an internationally agreed upon methodology
  – possibility of calculating SISEW/capita for a large group of countries using a standardized set of valuation methods
  – important to keep in mind that the eventual omission of any items is based on historical observations
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On the Future of ISEW (1)

- Call for alternative measures of well-being increases:
  - petitions in Belgium and the Netherlands
  - workshops in different EU member states (bv. Germany, France, the Netherlands, ...)
  - “Beyond GDP” (conference organised by the European Commission)
  - ISEW and GPI are often put forward as alternatives for the GDP
• However, ISEW and GPI are not ready to take up this role:
  – no consistent set of items and valuation methods
  – ISEW and GPI are not picked up by international organisations, research at the individual level
• Yet: the ISEW and GPI should be seen as a first step in a new direction
On the Future of ISEW (3)

- Both ISEW and GPI have great value as communication tools (especially when combined with a sustainability index, such as the Genuine Savings index and/or the Ecological Footprint)
- New macro-level set of accounts is needed, insights from ISEW/GPI might help here
Thank you!
Questions?

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