Alternative Indicators of Economic Welfare

Jerry Brian, Janet Hou, Jeff Milder, Michelle Upton
Environmental Strategies, December 12, 2003
What is GDP?

• GDP measures the earnings of production that take place within a country
• Example:
  – The profits of a mine or factory are attributed to the country where that mine or factory is located
• A gauge for measuring the wealth and status of a nation
• Feedback mechanism and driver of national policy
  – Defines the economic priorities and problems of a nation
• Increases in GDP are seen as increases in welfare of citizens
A Brief History of GDP

• 1931: Experts couldn’t address key economic problems posed by Congress
• Simon Kuznets develops framework for GNP
• GNP became determinant of national policy, and is credited with helping U.S. recover from depression and WW2
• 1991: GNP becomes GDP
  – Shifted earnings of a firm from country where it is owned to country where production takes place
  – Nations that previously had little economic activity become “statistical boomtowns”
  – Fueled globalization movement
Problems with GDP

• Does not provide a measure of quality or costs of growth

• Under GDP, pollution contributes to economic welfare while conservation comes at the expense of potential economic activity

• Examples of how “down becomes up”
  – Exxon Valdez Oil Spill
  – Rapid economic growth of Indonesia
  – O.J. Simpson Trial
Problems with GDP

Example: Forests

- Provide many economic benefits such as clean air, wildlife habitat, and recreation opportunities
- GDP only includes the value of harvested timber as contributing to economic and social well-being

“The current national accounting framework treats the earth as a business in liquidation” --Herman Daly
Alternative Indicators as an Environmental Strategy

- Alternative indicators differentiate between the costs and benefits of growth
- More accurate notions of well-being facilitate policies and institutional changes that promote activities where the needs of both the economy and environment can be met
- Create incentive for conservation and sustainable management of resources

“The purpose of an index that strives to measure economic well-being is not simply to show us how we are presently faring or likely to fare. It should also reveal the kinds of policies that would enable a nation to improve its welfare...[T]he important question then becomes whether our nation is going to continue in its efforts to increase total output or whether we are going to redirect our focus toward the enhancement of sustainable economic welfare.”

-- Daly and Cobb, For the Common Good, 1989
A Brief History of Alternative Economic Welfare Indicators

GDP
1930s

Measure of Economic Welfare (MEW)
Nordhaus and Tobin, 1972

Economic Aspects of Welfare (EAW)
Zolotas, 1981

Index of Sustainable Economic Welfare (ISEW)
Daly and Cobb, 1989

Genuine Progress Indicator (GPI)
Redefining Progress, 1995
Index of Sustainable Economic Welfare (ISEW)

Private Consumption

Income Inequality Adjustment

Adjusted Consumption

+ Services not Counted as Personal Consumption

- Implicit Overestimates of Welfare

- Depletion of Natural Resource Base

+/- Capital Accumulation & International Capital Flow

= Index of Sustainable Economic Welfare (ISEW)
ISEW: Some Environmentally Relevant Calculations

• Durables valued based on service, not consumption
• Subtractions for air, water, and noise pollution
• Subtractions for loss of wetlands and farmland
• Subtraction for depletion of nonrenewable resources
• Subtraction for long-term environmental damage
Per Capita GDP vs. ISEW 1950-1992

Source: Jackson and Stymne 1996
Genuine Progress Indicator (GPI)

- “…comprehensive measure of national health expressed in economic terms.”¹
- Includes economic contributions while subtracting negative factors.
- Calculates a much more accurate picture of economic progress than GDP.

¹ Cobb, C. et al, Redefining Progress Issue Brief, December 2001
Basic GPI Categories

- Consumption base
- Additions for Services Not Counted as Consumption
- Subtractions for Implicit Overestimates of Welfare
- Subtractions for Depletion of Natural Resource Base
- Adjustments for Capital Accumulation and Flow
Recent Trends in Genuine Progress Indicator (GPI)

![Graph showing differences in annual growth rates between per capita GDP and GPI](image)

**FIGURE 2**

Differences in Annual Growth Rates Between Per Capita GDP and GPI

- **1950-60**: GDP - 1.7, GPI - 2.4
- **1960-70**: GDP - 2.9, GPI - 2.8
- **1970-80**: GDP - 2.1, GPI - 0.4
- **1980-90**: GDP - 2.2, GPI - 0.6
- **1990-00**: GDP - 2.2, GPI - 0.6

ISEW and GPI: Criticisms and Concerns

- Reducing multi-dimensional concept to a single number
- Arbitrary assumptions
- Monetization of environmental and social damages
- Some relevant future welfare reductions are excluded
- Leisure is excluded
- Limited data availability → calculation difficulties
- When used as a national indicator, does not account for “exporting” environmental and social problems

But most of these criticisms apply to GDP, even more so!

After Stockhammer et al. 1997 and Neumayer 1999
ISEW and GPI: Conclusions and Policy Implications

- Per-capita ISEW in the U.S. rose during 1960s, fell slightly in 1970s, and fell sharply in 1980s

- Major causes for recent decline:
  - Growing income inequality
  - Exhaustion of resources

- Social and environmental policies can boost ISEW/GPI:
  - Reduction in air pollution (Clean Air Act, 1970s)
  - Great Society programs, 1960s
Different Indicators, Different Conclusions

Sustainability in Scotland Based on Different Indicators, 1980-1993

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AENP</td>
<td>Increasingly sustainable</td>
</tr>
<tr>
<td>GS</td>
<td>Unsustainable, but becoming less so</td>
</tr>
<tr>
<td>NPP/K</td>
<td>Marginally sustainable, slight improvement</td>
</tr>
<tr>
<td>EF</td>
<td>Marginally unsustainable, little change</td>
</tr>
<tr>
<td>ES</td>
<td>Copper, lead, iron, iron, energy: unsustainable; cement: sustainable</td>
</tr>
<tr>
<td>ISEW</td>
<td>Unsustainable, worsening</td>
</tr>
<tr>
<td>GPI</td>
<td>Unsustainable, worsening</td>
</tr>
</tbody>
</table>

AENP, Approximate Environmentally-Adjusted Net National Product; GS, Genuine Savings; EF, Ecological Footprint; NPP/K, Net Primary Productivity relative to carrying capacity; ES, Environmental Space; ISEW, Index of Sustainable Economic Welfare; GPI, Genuine Progress Indicator.

Source: Hanley et al. 1999
The Future for Alternative Indicators

• Increase awareness about indicators and GDP’s shortcomings to create demand for paradigm shift

• Key question: What do we include or exclude?

• Implementation barriers: worldwide acceptance may be difficult
Questions for the Class

• Do the ISEW and GPI do a reasonable job of measuring welfare?
• Does it make sense to lump environmental factors with social and economic factors in a single indicator?
• What kinds of institutional change might result from adopting these alternative economic welfare indicators?