Lecture 11: Natural Capital, a System of Environmental Accounts

Prof. Parthum
Environmental Economics
Econ 475

Who is better off?

$$$$$

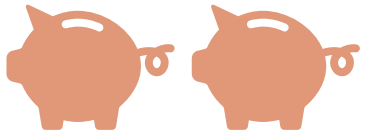
Income
(GDP)

$$

Who is better off?

Income
(GDP)

Savings
(stocks)



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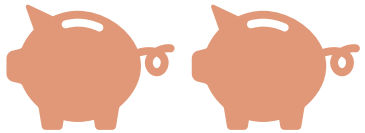
Savings (stocks)

Drinking Water



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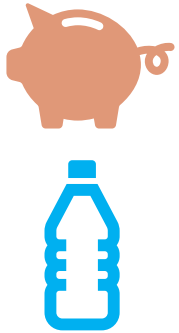

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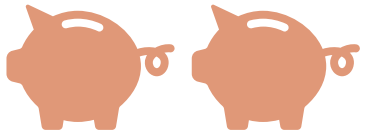

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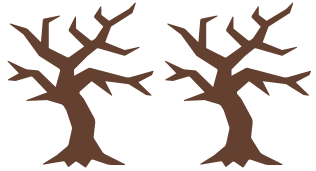

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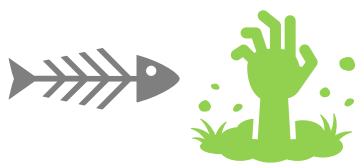
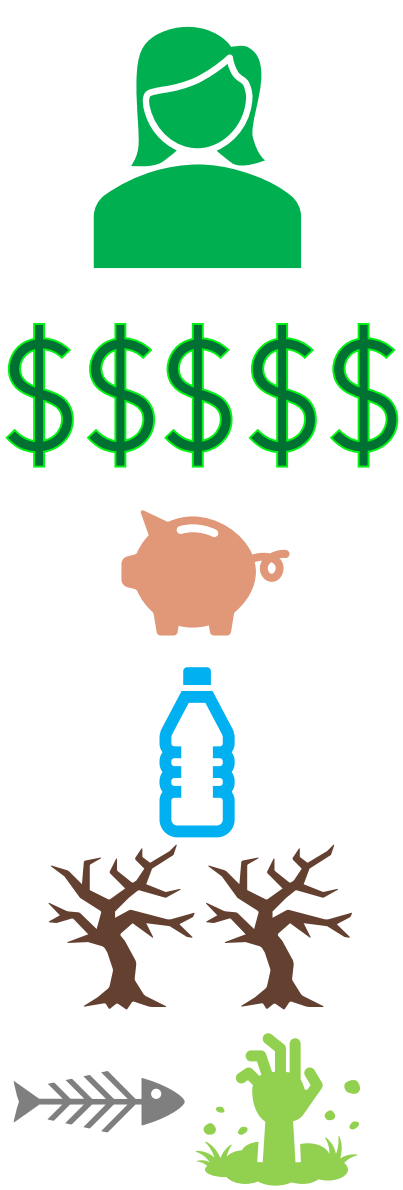
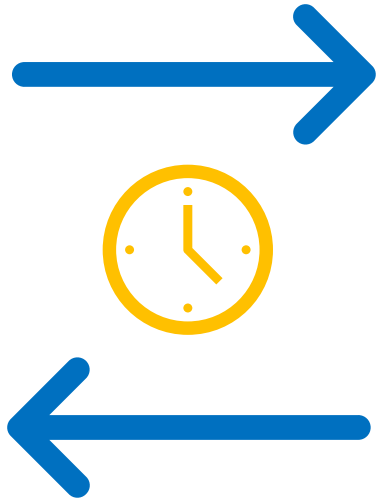
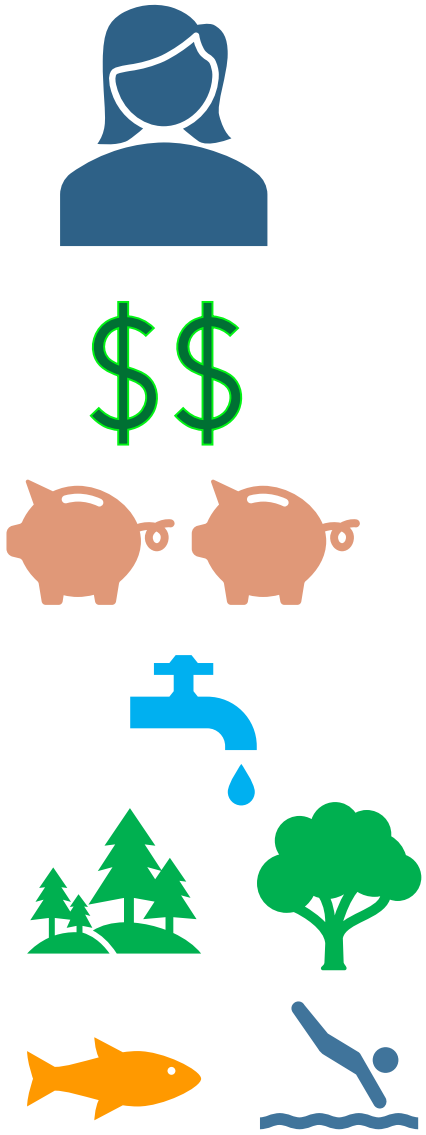


Aquatic Health





Who do we want to represent our future selves, or future populations?



Robert F. Kennedy's remarks at the University of Kansas; March 18, 1968

“Too much and for too long, we seemed to have surrendered personal excellence and community values in the mere accumulation of material things. Our Gross National Product…counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl. It counts napalm and counts nuclear warheads and armored cars for the police to fight the riots in our cities.

Yet the gross national product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile.”

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Simon Kuznets in a report to Congress; 1934

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- Simon, the inventor of GDP, warned of exactly the type of devotion to a single metric!

So, are we doomed?

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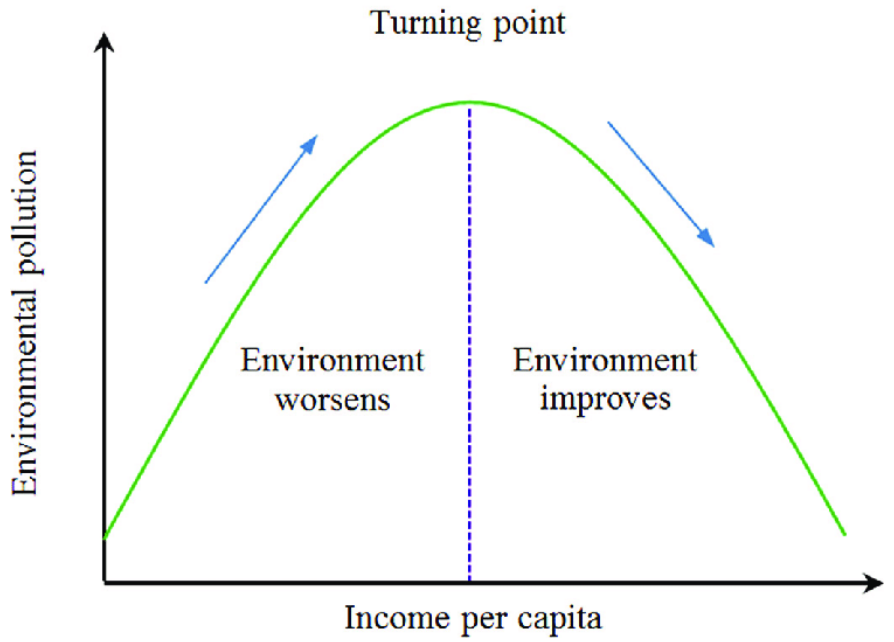
- We also know that technological change is an incredible thing.
- Can this help explain the intuition behind the shape of the Environmental Kuznets Curve?



Sustainability, in Economic Terms

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- Is extracting a scarce resource (natural nonrenewable resources) necessarily a bad thing? Likely depends on what we do with those scarcity rents (revenues)!

Sustainability, in Economic Terms

- Examples of investments made using scarcity rents
    - Norway establishes a Petroleum Fund to invest tax revenues from oil companies operating in the North Sea. That fund is now worth over $7 trillion dollars! That's 20x their annual GDP.
    - Similar, the Alaska Permanent Fund is at $70 billion
    - Contrast this with UK's use of these scarcity rents, used to boost current consumption in the 1980's and lift them out of a recession.

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    - Contrast this with UK's use of these scarcity rents, used to boost current consumption in the 1980's and lift them out of a recession.
- Is it clear which one of these approaches is consistent with the definition of economic sustainability? While Norway and Alaska sure seem like winners, arguments could be made that UK was also acting sustainably.

Investing in a Hypothetical Future

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- But in seeking “sustainability” for future generation about which we know very little about, do we dismiss the very real inefficiencies of today’s wealth distributions?

- Overinvesting in climate policies today that will benefit future generations could amount to shifting the consumption of poor residents in poor countries today to their future, likely wealthier, counterparts.

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- On Earth Day, April 24th, 2022, The Biden Administration announced a new effort to establish a system of environmental accounts for the United States.
- How would this work, and how does it compare to GDP?
- It's useful to think of the proposal as a correction to traditional measures of income. For example, Net Domestic Product (NDP) is GDP minus the depreciation in capital.
- But what forms of capital are currently included?

Correcting GDP for Natural Capital Depreciation

- As with any capital, depletion of a natural resource depreciates its value.

Example: Coal Extraction

  - The extraction of 1 ton of coal adds $20 to GDP
  - Accounting for the depreciation of the mining equipment adjusts GDP to a measure of GNP of $10
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- Which measure is more useful for evaluating economic sustainability?

Difficulty at a National Scale and Bias of Omitted Capital

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- However, if the economic value of the excluded capital has increased overtime, then the bias has also.
- For example, wealthier societies participate more in outdoor recreation. Often competing with production things like mining that *are counted* in GDP/NDP!

We're Really Doing It!

- Statistics for Environmental-Economic Decisions
- Public comment is open until Oct 21st, 2022. Feel free to submit a comment through the federal register. Link here. Read the proposal, submit a comment, there's a good chance I'll be the one reading your comment.
- This is a 10-year project to just get it off the ground, plenty of time for you to start your career advancing the development of these accounts!

Next class

- Review Session!
    - Hoping I will be able to finish a fun review game… but worst case it will be me going over things that are on the yet-to-be-written exam.

- **Reminder:** Case Study #2 is on the course github repository and it is AWESOME – I think it provides a really great introduction to climate-economy models, DICE, and coding, all in one! Due Oct 9th by 11:59pm