


The History of Economics at the U.S. Environmental Protection Agency Confessions of an Errant Economist

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Presentation Overview

- The Birth of EPA: 1970
- EPA's Early Years: 1970-1980
- Economics Comes to the Fore: 1980-2000
- EPA Economists' Current Role
- Future Challenges for Economists at EPA

Setting the Stage for the EPA

- *Silent Spring* by Rachel Carson
- Use of Agent Orange in Vietnam War
- Cuyahoga River fires



The EPA is Born

- July 1970: EPA established by President Nixon
- Combined environmental programs from across government agencies, including:
 - Department of Agriculture (USDA)
 - Department of Health, Education and Welfare
 - Department of Interior
- Consisted of mostly lawyers, toxicologists, engineers and chemists, but few economists

EPA's Early Years: 1970-1980



A Minimal Role for Economics

- Initially, little role in EPA for economics
 - Early idea that safe—even pristine—levels of environmental quality were achievable at a reasonable cost
 - Little or no demand at EPA for economics in regulatory analysis
 - Clean Air Act, forbid EPA from considering costs in setting air quality standards.
 - Required standards “requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutants in ambient air.”

Economics at USDA

- While EPA created little role for economists, other federal agencies involved economists in policy.
- USDA agricultural economists influenced 1970s policy, through:
 - Agricultural subsidies
 - Acre set-aside requirements
 - Markets for agricultural commodities
- Agricultural economists made significant impact on public policy
 - Had more developed tools than environmental economists

EPA vs. USDA Economists

- Why did environmental economists face more difficulty in public policy than agricultural economists?
 - Public goods vs. market goods
 - Definitions of environmental commodities far from standardized
 - No standard method to measure quantity and quality of each commodity
 - Vague notions of cost, social value, and income and price elasticity
 - Existing benefit and cost estimates rendered obsolete by changes in technology, income, and taste

Early Years: An EPA without Economics

- Economists experienced minimal representation in EPA compared to other federal agencies
- Economic analysis not undertaken by EPA
- Policy promulgated with a strong mandate to protect the environment.

Environmental Economics' Growth Outside EPA

- While EPA had little role for economics, environmental economics elsewhere made strides.
- Resources for the Future (RFF): founded in 1952, but became highly visible to economists and policy makers in 1970s
 - Galvanized environmental economics research across leading research institutions
 - At EPA, incentives and economics gained steam thanks to RFF, which ably communicated research

Environmental Economics' Growth Outside EPA

- Beyond RFF, excellent economists entered environmental economics field.
 - Ayres and Kneese (1969) introduced mass balanced paradigm
 - Realization that pollution was inescapable part of production
 - Recognition that marginal costs rose as abatement activity increased.
- EPA took some time to realize these things.

Two Early Successes: **Economics Research** and Market Incentives

- **Economics Research**
 - 1971: Office of Research and Development (ORD) started Environmental Economics Research Program.
 - Large staff of in-house research economists that evolved into extramural research grants.
 - ORD scientists supported having strong economics research program at EPA.
 - Recognized that pollution resulted from economic activities, so economic research was necessary for pollution control.

Two Early Successes: **Economics Research** and Market Incentives

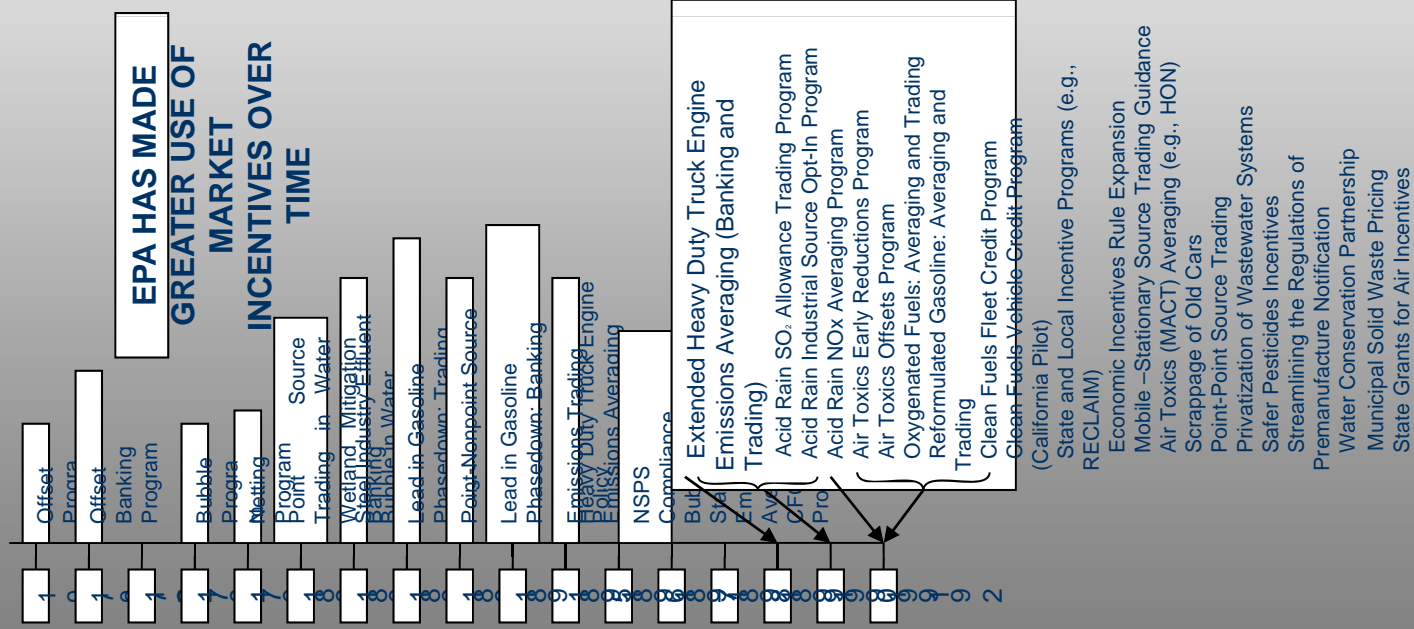
- EPA economics research program funded major research:
 - Seminal work on stated preference methods for quantifying environmental benefits
 - Methods to quantify costs and benefits
 - Economic incentives for pollution control
 - Possibilities for energy conservation

Two Early Successes: Economics Research and **Market Incentives**

- **Market Incentives**

- Bubbles in air quality standards
 - Allows facilities with multiple same-pollutant sources to comply with the aggregated pollution limit of all individual sources
 - Firms may undercontrol and overcontrol pollution from individual sources so long as net pollution level is less than the aggregate.
- Offsets
 - New sources could pay others to offset their emissions
- Mounting literature on the promise of market incentives

Growing Use of Market Incentives



Economics Comes to the Fore: 1980-2000



Reagan's Executive Order

- President Reagan pens Executive Order 12291
 - Requires a Regulatory Impact Analysis for all “economically significant” rules
 - To extent allowed by law, the policy option that maximizes net benefits should be selected
 - Office of Management and Budget tasked with reviewing regulations for compliance with E.O.
- E.O. 12291 was the major reason economics became an important part of the policy process in the 1980s.

Consequences of E.O. 12291

- Linked OMB regulatory review and BCA
- Some saw OMB review as process and BCA as the tool for rolling back environmental protection
 - Made BCA and economics controversial and misunderstood
- Needed clear division between the two
 - BCA as a scientific tool
 - OMB review as a normative policy exercise

Further Consequences of the E.O.

- Economics became a political tool, not a science
- Few at EPA believed economic analysis could be used to justify more regulation
- Many at EPA and outside stakeholders argued against and resisted economics in the regulatory process

EPA Response to the E.O.

- Program offices built economics staffs for analysis
- Policy office created an economics branch
- Economists earned senior leadership roles in the policy office
- Uncovered several cases for additional regulation
 - Controlling stratospheric ozone depletion
 - Alar, a plant growth regulator
 - Lead in gasoline

Economists' Other Contributions: 1980-2000

- Recognizing problems with differentiated regulations (i.e., new source bias)
- Utilizing ordinal measures to indicate risk of pollution
- Completing comparative risk studies
- Analyzing benefits of performance standards and emissions trading over strict technology standards
- Examining risk-risk tradeoffs
- Completing Clean Air Act Retroactive Study
- Making improvements to risk-assessment

Economics at the EPA Today



Economics is a Science

- NCEE Director sits on EPA Science Policy Council
- EPA Science Advisory Board has Environmental Economics Advisory Board, composed of leading environmental economists
- EPA Guidelines for Preparing Economic Analysis govern proper conduct of economics

Economists Participate in the Regulatory Process

- For every new rule, EPA forms a work group
- If rule is economically significant, an economic subgroup is created
 - On average, 6 to 12 rules per year deemed “economically significant”—costs or benefits exceed \$100 million.
- Program offices design and conduct analysis, and NCEE usually provides review and comment

RIAs Influence Policy

- RIA is most direct route for economics to influence national environmental policy
 - In setting NAAQS, though cost considerations are not permitted, RIA still conducted and requires large amounts of energy, resources, review, and senior officials' time.
 - BCA available to the public, published in docket
 - Play integral informative role in regulatory process

Economists' Most Recent Role

- Contributions to Risk Assessment
 - Question use of threshold model for risk assessment, which fails to see that additional benefits exist for reducing exposure beyond RfD
- Thinking on the Margin
 - Economists trained to think on margin
 - Lawyers, ecologists, health scientists, etc. are not

Some current preojects

- Economic Guidelines
 - VSL
 - Discounting (inter and intra generational)
- Ethanol
- Evaluation of Army Corps of Engineers water projects
- PACE



Future Challenges of Economics at EPA



Climate Change

Three policy areas:

- Regulations under the Clean Air Act
- Economy-wide market mechanism to limit greenhouse gas emissions
- International negotiations for multilateral agreement on limiting world's greenhouse gas emissions
- Environmental Economists' Prominent Roles
 - Billy Pizer (formerly RFF): Deputy Assistant Secretary for Environment and Energy in the Treasury Department
 - Michael Greenstone (MIT): chief economist of CEA; will cover climate and other energy and environmental issues
 - Joe Aldy (formerly RFF) brought into Obama White House

Tools and Topics for Future Decision Makers

- Meeting needs of future decision makers: sustainability, green jobs, environmental justice
 - Economists can provide more vigor and useful toolbox to address these
- Understanding market incentives
 - Success of some market mechanisms has made non-economists quick to push more.
 - BUT economists arguing that incentive systems not always best because:
 - Transaction costs
 - Behavior of atmospheric and water chemistry
 - Regional implications

Economics and Science

- Use of science (economics) in policy process
 - Well-trained employees conducting high quality analysis
 - Ignoring attempts to sway economic analysis (inside and outside), while still considering peer review and technical discussions
- Applied benefit and cost studies
 - Obtaining steady flow of empirical studies to provide credible benefit and cost estimates
- Use newest “hard science”
 - Incorporating breakthroughs in understanding health and ecological risk posed by pollution

Closing/Conclusion

- After having almost no presence in EPA, economists have risen to provide significant input to economics research, EPA regulatory processes, and pressing policy concerns.
- Economists have made contributions far beyond performing benefit-cost analysis
 - Trading
 - Standardizing risk information

Conclusions

- Advancing risk estimation
- Thinking on the margin (Ecosystem Services)
- Fostering an understanding that environmental pollution (and vulnerability) is a result of human behavior and preferences.
- Notions of social costs, opportunity costs and welfare are far more embedded in everyday thinking of EPAers.