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Sustainable Development

1. What Is Economics?

ECONOMICS EXPLAINS AND PRESCRIBES RESOURCE USE

Resources: any good produced
any service provided
natural resources

It is humanistic--has human focus.

It is young and expanding.

Assumptions about human nature and technology.

Key to analysis.

Key concepts: Individuals pursue self-interest.
Rationality of choices.
Occurrence of trading and exchange.

Tools of trade: Deductive analysis using mathematical tools.

Inductive derivation of stylized facts.

Statistical test of hypotheses and prediction.

Economics leads to quantitative and qualitative policy prescription.

2. The Evolution of Economics

Key initial results:

- Key institutions: Market, consumer, producer, state.
- Adam Smith's "invisible hand".

  Interaction of selfish individuals through markets is optimal from a societal perspective.

- Ricardian rents: Resource obtains value reflecting their scarcity and uniqueness.
- Relative advantage and gain from trade. International and interregional trade improve global welfare. Regions specialize in their areas of strength.
- The evil of monopoly and concentration. Concentrated market powers lead to inefficiency and exploitation.

Developments

a. Macroeconomics

- Aggregate relationships in an economy have their own behavior rule. Understanding of these rules is essential for policy analysis.

b. Bounded Rationality (Simon)

Human capacity to process data is limited. Cognitive limitations result in simple (seemingly suboptimal) behavioral rules.

Implication:

(1) Need to incorporate psychological knowledge in economic models.

(2) Species behavior can be explained as pursuit of self-interest given cognitive constraints.

c. Institutional Economics

- Market failure: Correction is needed.

  When externalities (unintended side effects) and/or public goods (goods consumed simultaneously by many) exist, markets are suboptimal.

  Externality justifies antipollution policies.

  Public good considerations: Justifies resource control policies and patent laws.

- Social well-being requires institutions other than markets for human interaction.

  - law
  - collective action organization

- Political economy:

  Politics is expansion of economics. Politicians pursue self-interest. Government institutions may fail.

  Recognition of human frailty is essential in the design of institutions, in particular, government.

  Economics has to expand and include aspects of political science and sociology. A better understanding of altruism and civil mindedness is needed.

- Industrial organization:

  Scale and scope considerations lead to evolution of corporation--mega organizations that integrate vast activities.

  There are internal markets in organization. Economics can assess the evolution and performance of these organizations and policies can regulate them.

d. Dynamic Modeling

- Marx identified the weakness in static economic modeling. He developed a framework for economic interpretation of history.

- Schumpeter expanded the "invisible hand" concept to a dynamic Darwinistic mechanism. Innovation and technological change reduce prices and may harm firms but improve welfare.

- Hotelling developed a basic framework to analyze the economics of natural resources and identified market failure in uncontrolled harvesting.

- Solow and Kuznets developed a framework to record and analyze growth. They developed a notion of optimal growth, relating growth to investment, savings, and population growth. They argue that, with technological progress, sufficient savings, and control of population growth, there may be "sustainable growth." These model ignore pollution and environmental quality.

- Romer introduced the notion of "endogenous growth." Learning and technology are the engines of growth, and education and human capital are key to growth.

- Griliches recognizes that adoption of technologies is time consuming. Economic incentives affect the speed of adoption.

- Daly and others recognize resource constraints and suggest limits to growth and vulnerability of the planet to excessive human activity.

e. Information Economics

- People are adverse to risk--institutions such as insurance, diversification, and future markets were introduced to address uncertainty.

- Uncertainty and irreversibility of outcomes suggest slowing development and developing policies if *adaptive*. Constant learning about nature or resources is being used.

- Policymakers have incomplete information about regulator's behavior. Policy designs have to take into account regulator's

mode of behavior and regulator's information and monitoring capacity.

- Randomness and uncertainty lead to development of inventory and storage policies.

f. Human Capital and Hedonic Consumption

- Individuals derive benefits from nonmarket goods. There is an internal production process within families that provides commodities that are a source of utility. Ability to assess nonmarket value is crucial to understanding family and social behavior and for environmental policy.

- Accumulated knowledge is a source of productivity . Education leads to improvement in both managerial and specific skills and are key to long-run progress.

Conclusion

Economics now attempts to explain many aspects of human behavior.

Institutions--not only markets.
Consumption and pleasure choices
Growth and development

It needs basic knowledge of other disciplines to be effective--social sciences and psychology for a better understanding of behavior and natural sciences for a reasonable assessment of interaction with natural and technological options.

The Gutierrez-Regev Model

Provides a natural science base for models of renewable resources.

Identifies market failure in unregulated harvesting.

Suggests need for policy intervention.

Key question: What are the differences between humans and animals?

- Ability to harness energy.
- Ability to store information.