Lecture 20

Climate change causes, mitigation policies and the EPA's proposed Clean Power Plan.

First, the Quiz

Team Activity

• What is your team estimate of the probability that global climate change leading to increasing temperatures is, to a significant degree, anthropogenic (0-100%)

• When done, send a representative to the front who can explain the argument(s) behind your team choice. If the answer is a compromise, the representative should be able to explain the reasons behind both sides.

Team Choice:
What type of risk is climate change?

A. Private risks:
One makes the decision and then pays the consequences.

B. Public risks:
We’re all in it together, but usually only one makes the decision.

C. Private gains, public losses:
One makes the decision and will gain, but everyone might lose.

Mitigative Actions

Reduce emissions
• Switch fuels
  – Solar
  – Wind
  – Biofuels
  – Natural Gas
  – Nuclear
• Conserve
• Capture

Increase absorption
• Carbon Capture & sequestration
  – Store in Oceans
  – Store in Mines
  – Store in Aquifers
• Biological Sequestration
  – Forest
  – Soils

Review:
The first equimarginal condition

• An efficient policy will maximize the net benefits to society.
• This will occur where the marginal benefit to society is equal to the marginal cost.
The first equimarginal condition applied to climate change mitigation

- Society should take action against climate change up to the point where the expected marginal benefit to society in terms of reduced costs of warming today and in the future is equal to the marginal cost to the economy today.
- Key Differences:
  - Expectations, benefits are highly uncertain.
  - Temporal aspect – emissions today will be around for a very long time.

Review:
The second equimarginal condition

- An cost-effective policy will minimize the cost of achieving a policy goal.
- This will occur where the marginal all possible sources of the problem have the same marginal cost.

The second equimarginal condition applied to climate change mitigation

- Under a cost effective policy, the marginal cost of mitigation should be equal across all sources.
- A policy that places a price on emissions (tax, subsidy or cap & trade) will be more cost effective than a command and control type policy.

So what is actually being done

- State initiatives
  - RGGI
  - California
- US National Program
  - Proposed Clean Power Plan
- International Actions
  - UNFCC Process
  - Kyoto Protocol
  - European Emissions Trading Scheme
  - Paris Accord

What is Massachusetts vs. EPA?

- State-specific emissions goals for reducing carbon dioxide (CO2/energy output)
- Each state has flexibility and could set up a intra- or inter-state trading program.
- Must comply with the Clean Air Act, which is primarily designed to address criterion air pollutants using plant-level practice changes.

Key elements to the CPP

- State-specific emissions goals for reducing carbon dioxide (CO2/energy output)
- Each state has flexibility and could set up a intra- or inter-state trading program.
- Must comply with the Clean Air Act, which is primarily designed to address criterion air pollutants using plant-level practice changes.
On what grounds is the CPP being challenged?

Global Cooperation

- Why is global cooperation important to addressing global warming?
  - Hint: What type of good (bad) is climate change?

- The United Nations Framework Convention on Climate Change
  - Kyoto Protocol signed in 1997
  - Substantial improvements in Paris Accord

Paris Accord According to Stavins

- 186 countries committed to “Intended Nationally Determined Contributions” (INDCs), “a key step toward reducing the threat of global climate change.”
- Commitments from both developed and developing countries.
- International policy linkage
- US Policies include CPP, CAFE standards, etc.

Source: http://www.robertstavinsblog.org/2015/12/12/paris-agreement-a-good-foundation-for-meaningful-progress/

Paris Accord According to Stavins

- “The Paris Agreement provides an important new foundation for meaningful progress on climate change, and represents a dramatic departure from the past 20 years of international climate negotiations. Of course, the problem has not been solved, and it will not be for many years to come. But the new approach brought about by the Paris Agreement can be a key step toward reducing the threat of global climate change. In truth, only time will tell.”

Source: http://www.robertstavinsblog.org/2015/12/12/paris-agreement-a-good-foundation-for-meaningful-progress/