Big Questions, Big Opportunities

Estimating Unintended Impacts on Land Use from Energy and Climate Change Policy

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Competing Demands for Land

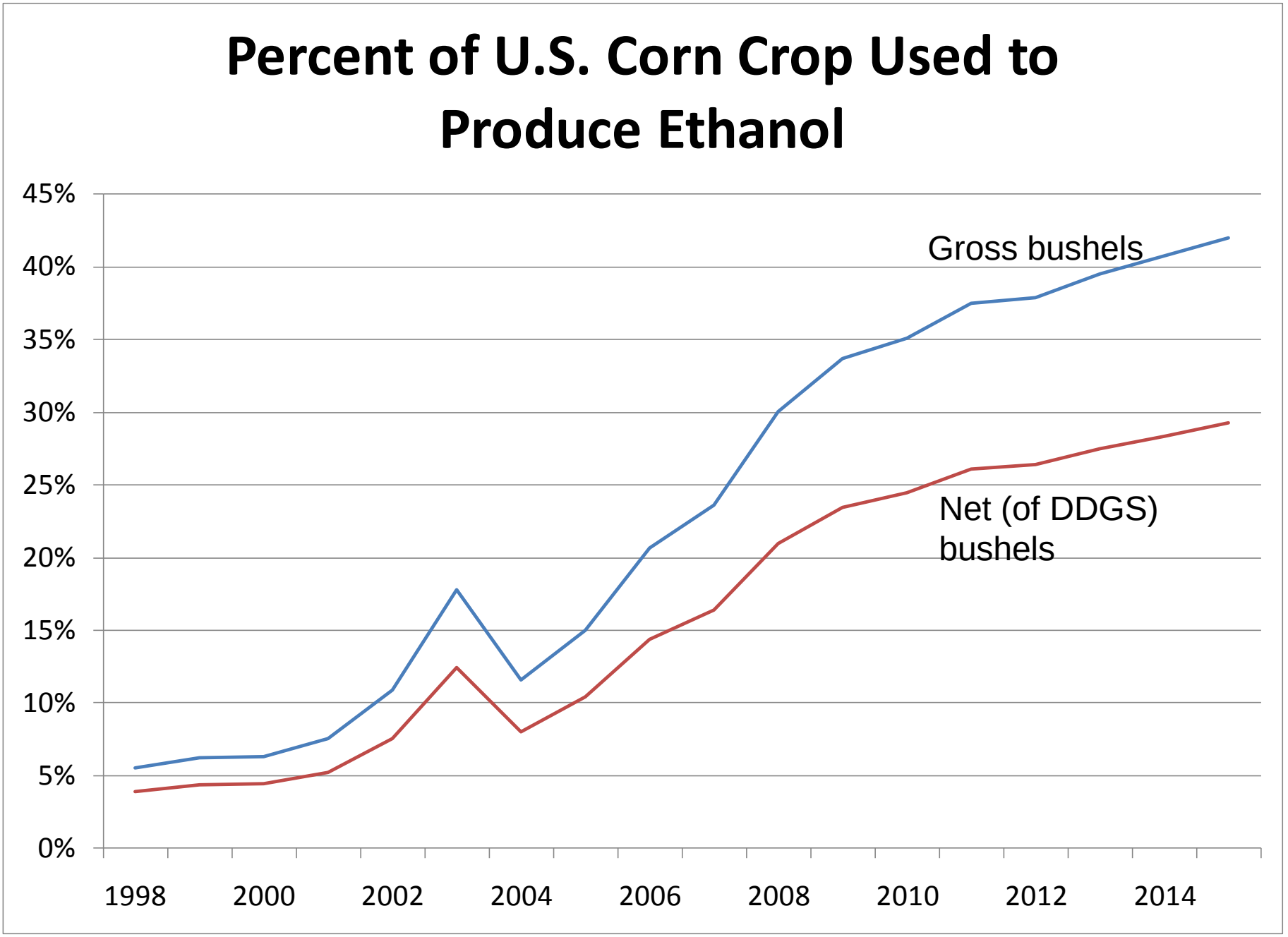
- Traditional uses
  - Feed for livestock (grass and feed grains)
  - Food for humans
  - Environmental services (eg, open space, habitat, flood control)
- New Demands
  - Feedstock for liquid fuels
  - Feedstock for renewable electricity
  - Carbon sink in soils
  - Carbon sink in forests

Two Examples of Unintended Consequences

- Energy Independence and Security Act
  - Mandates 20% of U.S. liquid fuels comes from biofuels

- House climate change bill (Markey Waxman)
  - Allows agricultural sinks to serve as GHG offsets

Percent of U.S. Corn Crop Used to Produce Ethanol



Impacts from Increased Corn Ethanol

- World prices of corn and crops that compete with corn for land will be higher
- U.S. and international production will increase
- Expanded crop production comes about in part by expanding cropland
- Expansion of cropland increases CO2 emissions relative to what they would be without ethanol
- Indirect emissions offset at least a portion of the direct emission reduction from using renewable fuel

Markey Waxman

- Collin Peterson's amendment allows agriculture to sell emission offsets
- Growing trees likely the largest provider of offsets
- Restrictions on international offsets means that trees will be grown in the U.S.
- EPA estimates that many millions of acres of U.S. cropland will be converted to trees
- Where will the crops get grown?

Science of Land Use not Well Developed

- Regulators' demand for science has outstripped supply
- Agriculture's participation (positive or negative) in a world where CO2 (or equivalent) is valued requires more knowledge than for other sectors because agriculture is a non-point source of CO2.
  - Who is going to do the science? Researchers that know nothing about agriculture and food production?
  - Will the public support the cost of increased knowledge?