



Carbon Pricing and Agriculture: A Research Review

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Only recently has research been catching up with the questions.

- Due to complexity of all of the interactions of HR 2454.
- HR 2454 is the most economically significant legislation since income tax legalization.
- How will market participants respond?

Only recently has research been catching up with the questions.

- Because we do not know the full extent of price changes, we cannot know the responses of producers to changed prices.
- We can only estimate the carbon price that will be set.
- The entire economy *will* respond to the incentives created by cap-and-trade.
- Therefore, if we assume fixed technology, we will almost certainly overstate the impact of ACESA.

What research has been done on current proposals effects on Ag?

- Much on Warner-Lieberman as well as generic GHG legislation.
- Specific to 2009 proposals:
 - USDA
 - CARD-Iowa State University
 - FAPRI-University of Missouri
 - Texas A&M
 - Duke/Texas A&M

What are the direct cost effects?

- Fuel
- Fertilizer(?)
- Energy Use
- These are likely to be relatively small (5-15%).
- While the effects will be larger after 2025, they will still almost certainly be much lower than the rise in energy costs because of market forces.

What are the potential offsets?

- No/Reduced Tillage
- Biodigestion of manure
- Cover crops
- Forest Management/Afforestation
- Overall, these will cover the increased direct costs, through at least 2025, when fertilizer allowances expire.

What are the other effects?

- Carbon embedded in capital expenditures:
 - Steel & Concrete
- Increased demand for biomass
 - Biofuels, biomaterials, co-generation
- Changes in producer/market behavior

These are harder to study.

What do we have?

- CARD-ISU: Fairly informal analysis.
- FAPRI-Missouri: Rigorous but input-side only.
- AFPC-TAMU: Most Comprehensive to Date, omits forestry.
- Duke-TAMU: Includes forestry, less 'farm-level' detail.

What are the net effects?

- Input prices will rise, but will generally be small for most producers as long as EITE provisions protect fertilizer industry.
- But the results are not uniform:
 - Grain farms are almost uniformly better off.
 - Cattle ranches are almost uniformly worse off.
 - Dairies have higher income, but most make large capital outlays for digesters.
 - Rice farms are much worse off.
 - Cotton farms are somewhat worse off.

Dispatches from the Dismal Science

- A (well-designed) Cap-and-Trade and a carbon tax are nearly identical to an economist.
- Prices of carbon consumption must rise in order to incentivize reduced consumption.
- In general, handing out carbon allowances (to generators, for example) will ***not*** prevent price increases to consumers.

The Devil is in the Details:

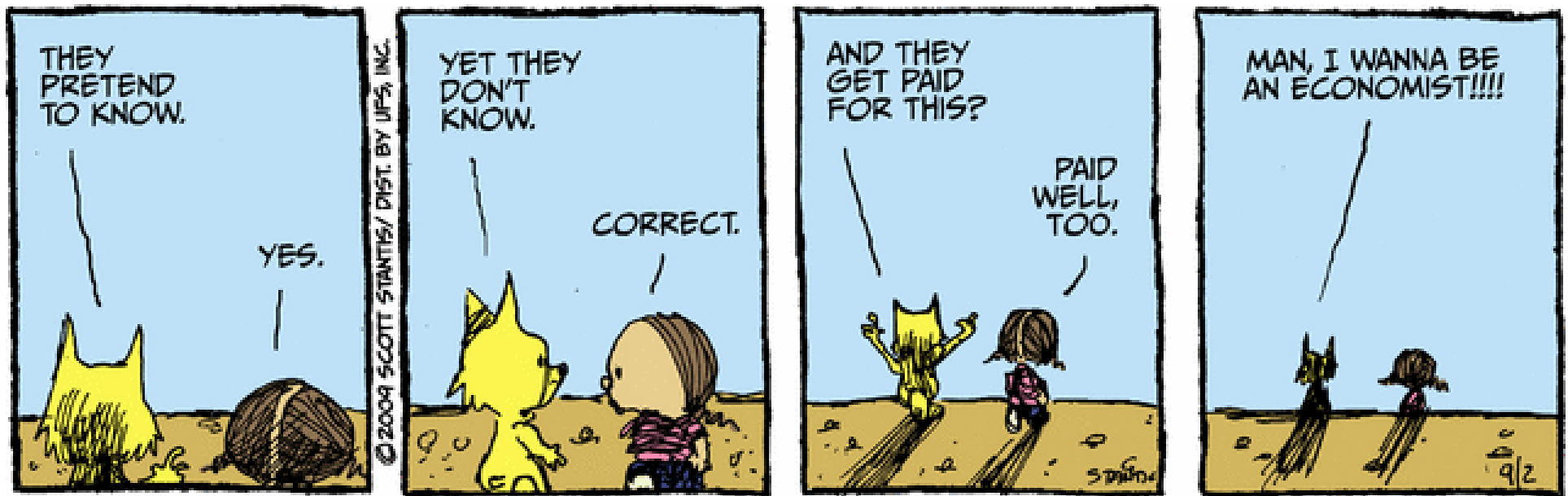
- Additionality
- Continuous No-Till cost of adoption
- Enforcement
- Are CAFOs certain that they are agriculture?
- Who owns the carbon credits, farmers or landowners?
- Program complexity? Look at ACRE signup.

What will the net effect be on Agriculture?

- On balance it will be positive--it must be to attract Midwestern votes.
- CAFOs have the most to gain through anaerobic digestion.
- For most crops, offsets should cover increased input costs.
 - Some exceptions: cattle, rice.

What questions remain?

- What are the effects on pork and poultry?
- What are the effects on the fruits and vegetable industries?
- What are the (global) implications of large-scale afforestation of crop-land in the US?
 - What are the right assumptions to use about technology?



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What is 'Cap-and-Trade'?

- A way to provide incentives to reduce externalities...
 - Also command-and-control and Pigouvian taxes.
- 'Licenses to Emit' are created and distributed
- Emitters must either receive or buy these licenses to continue emitting.
- Markets arise to trade these licenses.
- Those for whom reducing emissions is cheapest sell their permits to those who cannot reduce as cheaply.
- The SO_x market has been very successful.