

Thoughts on the RFS and EPA's Proposal

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What is RFS Supposed to Do?

- Replace fossil energy with renewable energy in transportation sector
 - Cut CO2 emissions
 - Reduce imports of crude oil
 - Reduce funds for Middle East governments
- Increase rural development through greater agricultural prosperity (higher corn prices)

How is RFS supposed to accomplish these goals?

- Create financial incentive to invest in infrastructure needed to expand ability to use ethanol and biodiesel
- RIN price is a tax gasoline and diesel sales
- Oil companies can reduce their tax by reducing RIN prices by increasing the consumer demand for biofuels

Is Ethanol Demand Limited?

- All cars can use 10% ethanol blend
 - 10% of 137 BG of gasoline = 13.7 BG
 - Oil companies like 10% ethanol
- To use more than 13.7 BG requires higher-than-10% blend
 - E85 or E15
- Feasibility of meeting RFS targets depends on inducing drivers to buy E85 and E15

Proposed Volumes

	2014	2015	2016
Total	15.93	16.30	17.40
Advanced	2.68	2.9	3.4
Biodiesel	1.63	1.7	1.8
Cellulosic	0.03	0.11	0.21
Other Advanced	0.205	0.24	0.49
Implied Corn Ethanol	13.25	13.4	14

Some Basic Facts

- $13.4 \text{ BG} + .24 + .11 = 13.75 \text{ BG}$ in 2014.
 - This volume can be met if all motor gasoline contains 10% ethanol
 - But not likely to happen due to demand for E0
 - Implies positive RIN prices for all categories
- $14 \text{ BG} + .49 + .21 = 14.7 \text{ BG}$ in 2015
 - This volume can be met if all motor gasoline contains 10% ethanol and maximum amount of E85 is sold to 18 million flex vehicles through existing infrastructure
 - Implies high RIN prices for all categories

Impact of Stock of RINs

- At least 2 billion gallons of carryover “credits” are available to meet ethanol targets
 - Oil companies will use a portion of these credits instead of the fuel to meet obligations in 2016
 - Use of credits will lower the price of RINs and reduce the incentive to invest in more E85 and E15 outlets

Key Issue

- Will EPA increase volumes in 2017?
 - If yes: should announce today so that plans can be made
 - If no: should announce today to keep investments from being made.

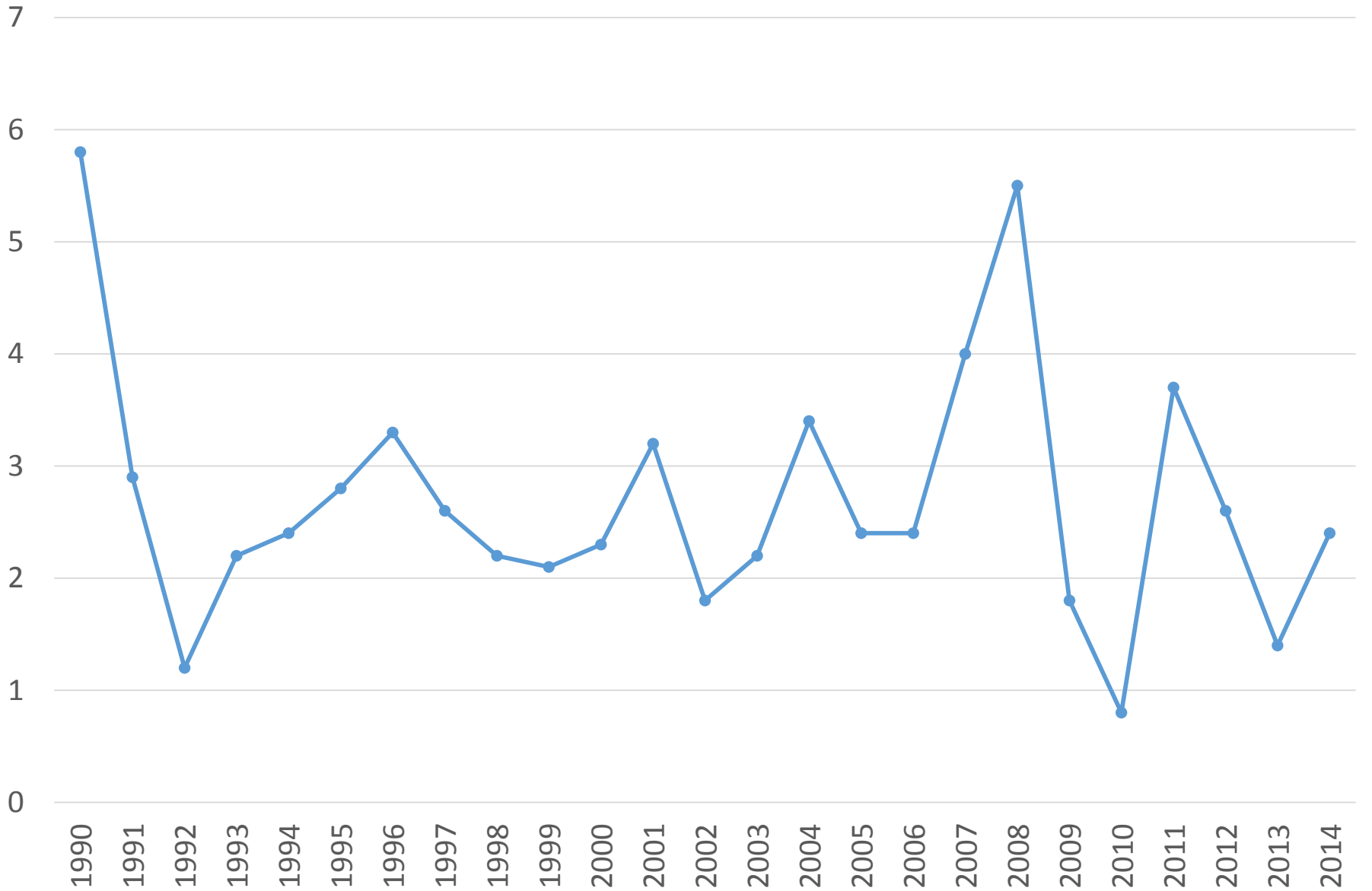
Impact of EPA's proposal

- May create incentive in 6 months to expand ethanol fueling infrastructure
- Creates incentive to import sugarcane ethanol
- Creates incentive to produce and import biodiesel and renewable diesel

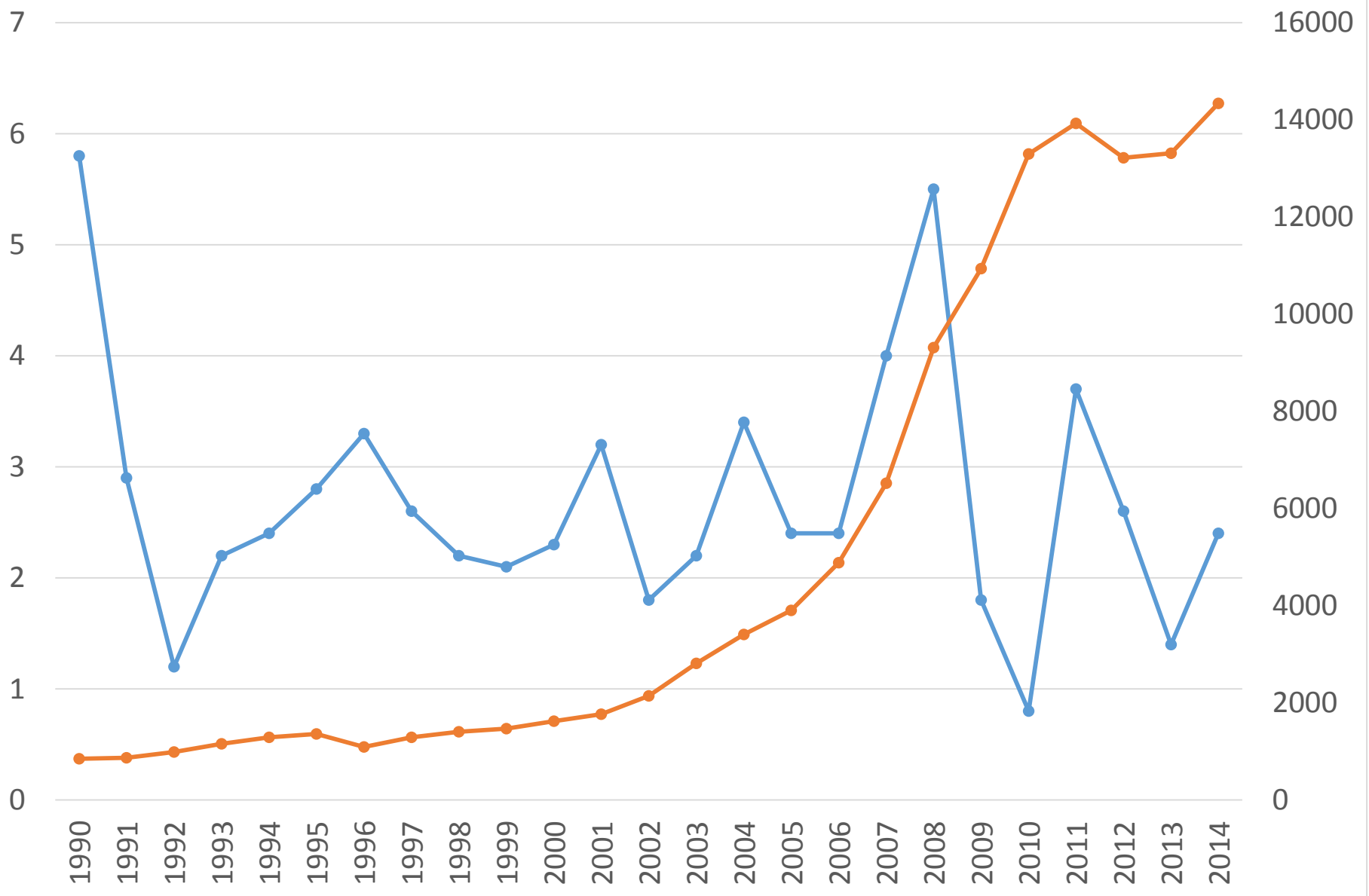
Common Criticisms of the RFS

- More biofuels means higher food prices
- High tax on gasoline and diesel increase fuels costs
- Biofuels worse than coal in terms of CO₂ emissions because of land use change
- E85 is a failed fuel

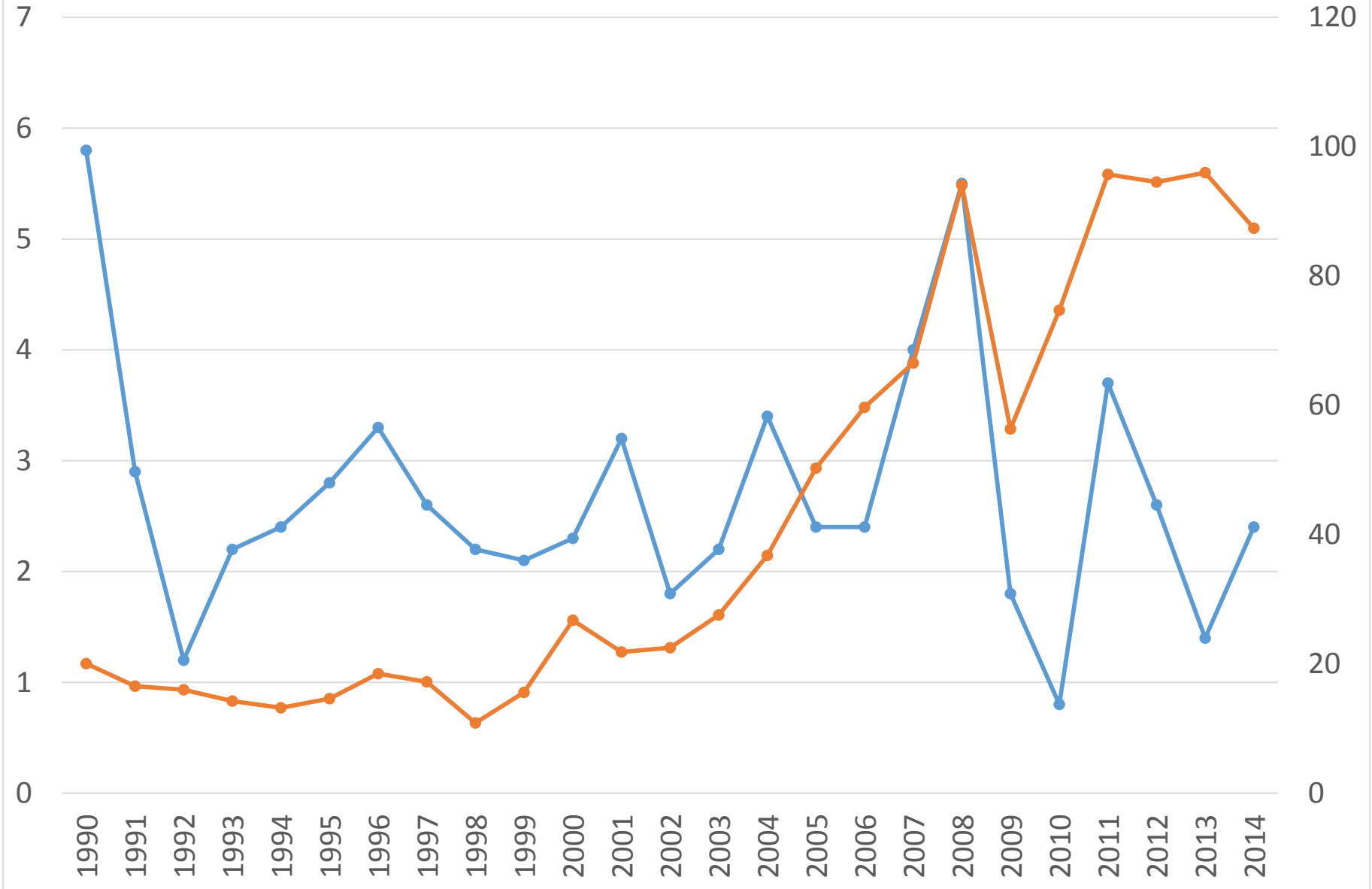
US Food Inflation Rate



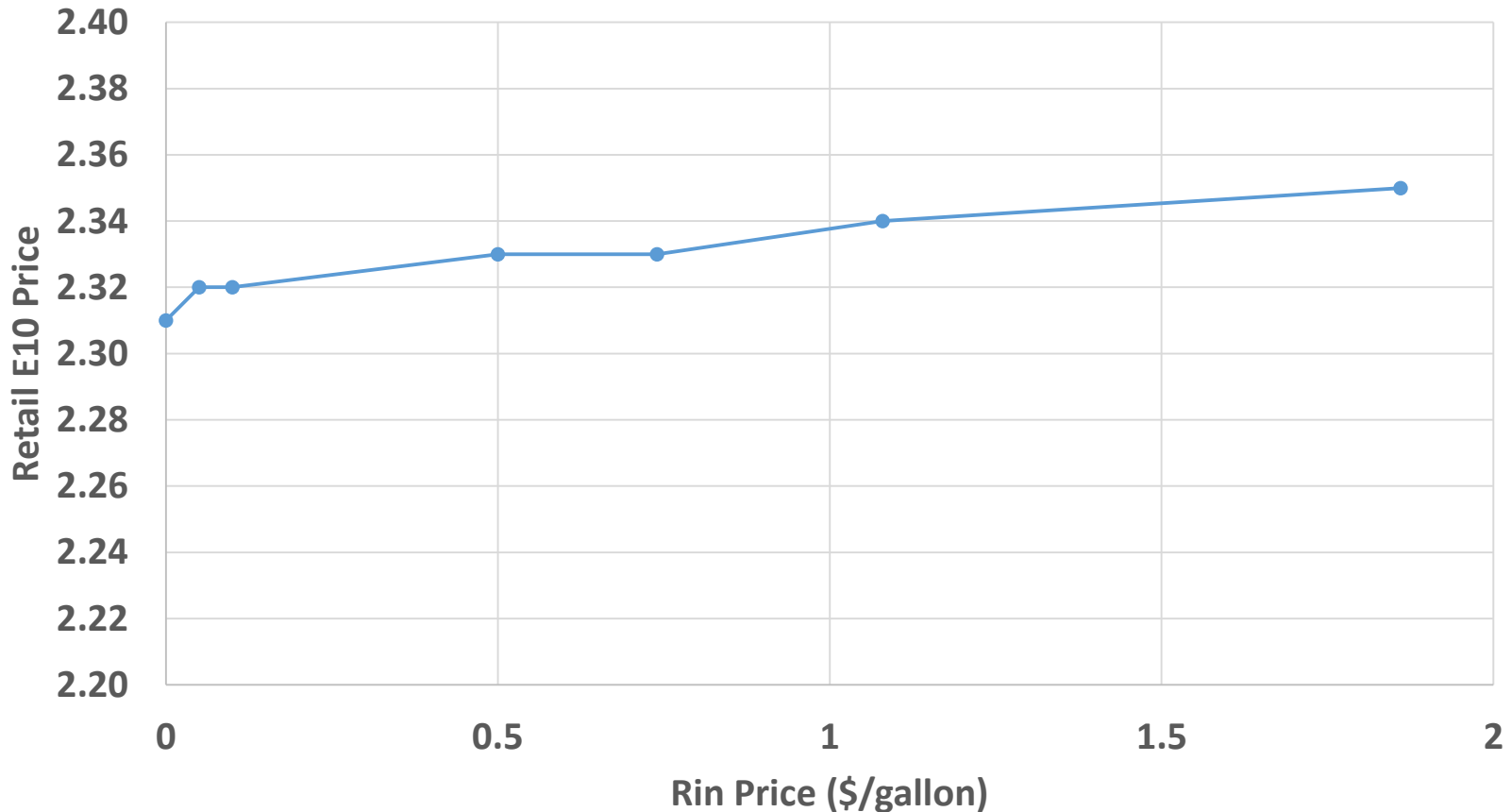
US Food Inflation Rate vs Biofuel Production



US Food Inflation Rate vs Crude Oil Price



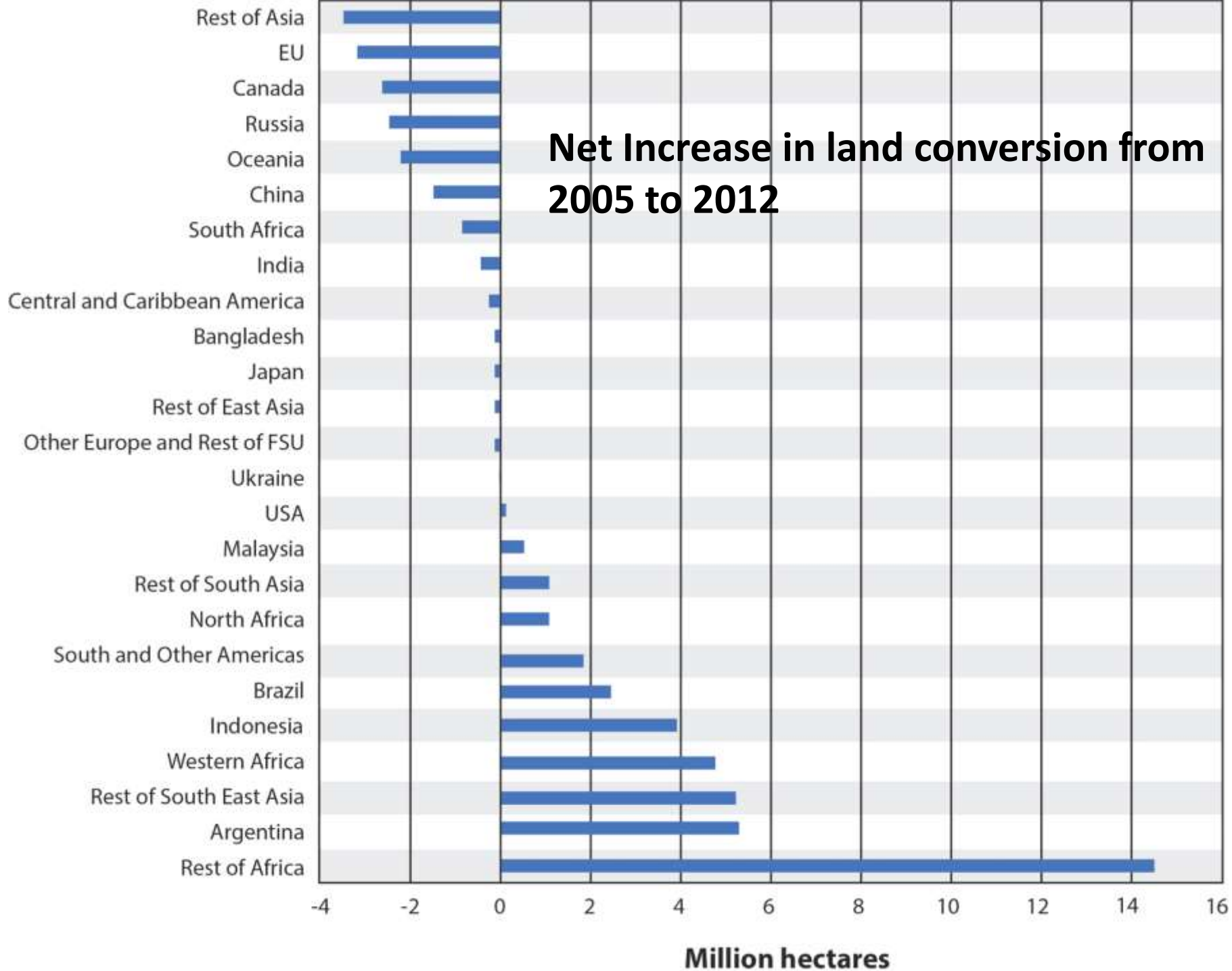
Fuel Cost vs RIN Price



Notes: Assumes gasoline can be freely exported at prevailing world price.

Source: Pouliot and Babcock. 2015. "Impact of Ethanol Mandates on Fuel Prices when Ethanol and Gasoline are Imperfect Substitutes." Under review AJAE.

Biofuels Result in Large Conversion of Land



Demand for E85 in Ames, Iowa

