

Bio-Renewable Energy's Impact on Agriculture and the Economy

Chad Hart

Center for Agricultural and Rural Development

Iowa State University

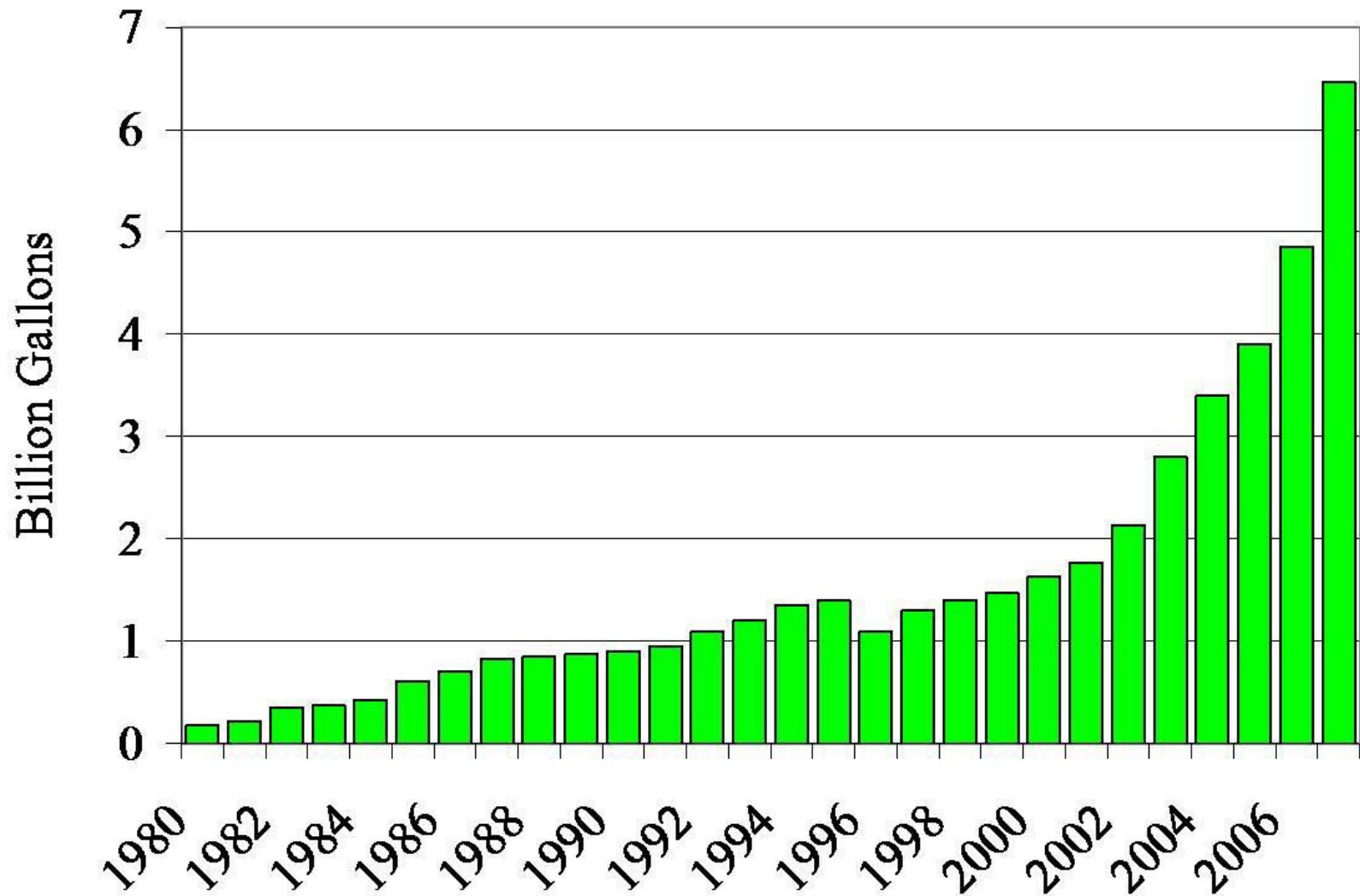
E-mail: chart@iastate.edu

April 24, 2008

University of Arkansas

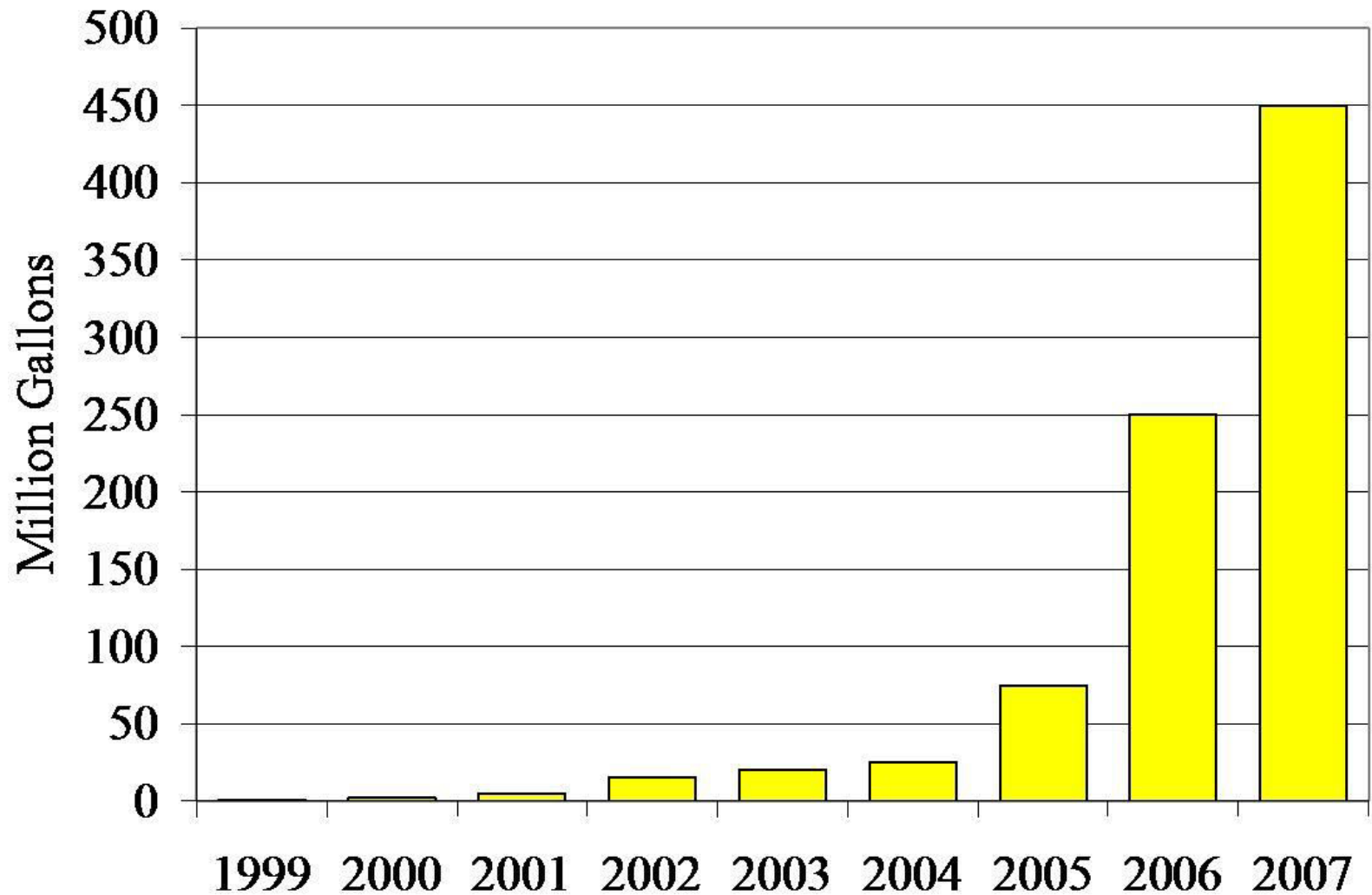
Fayetteville, Arkansas

Ethanol Explosion



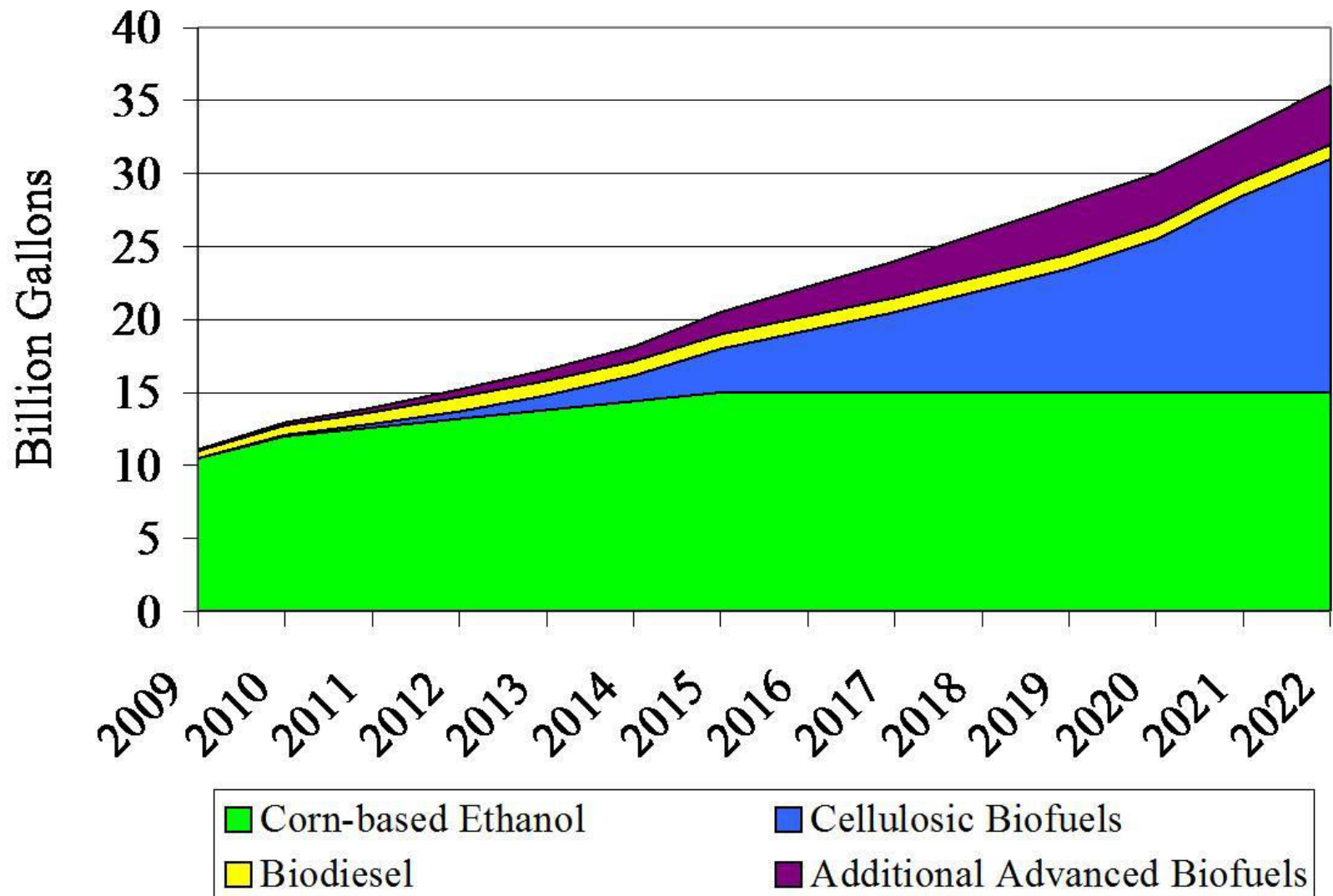
Source: Renewable Fuels Association

Biodiesel Growth



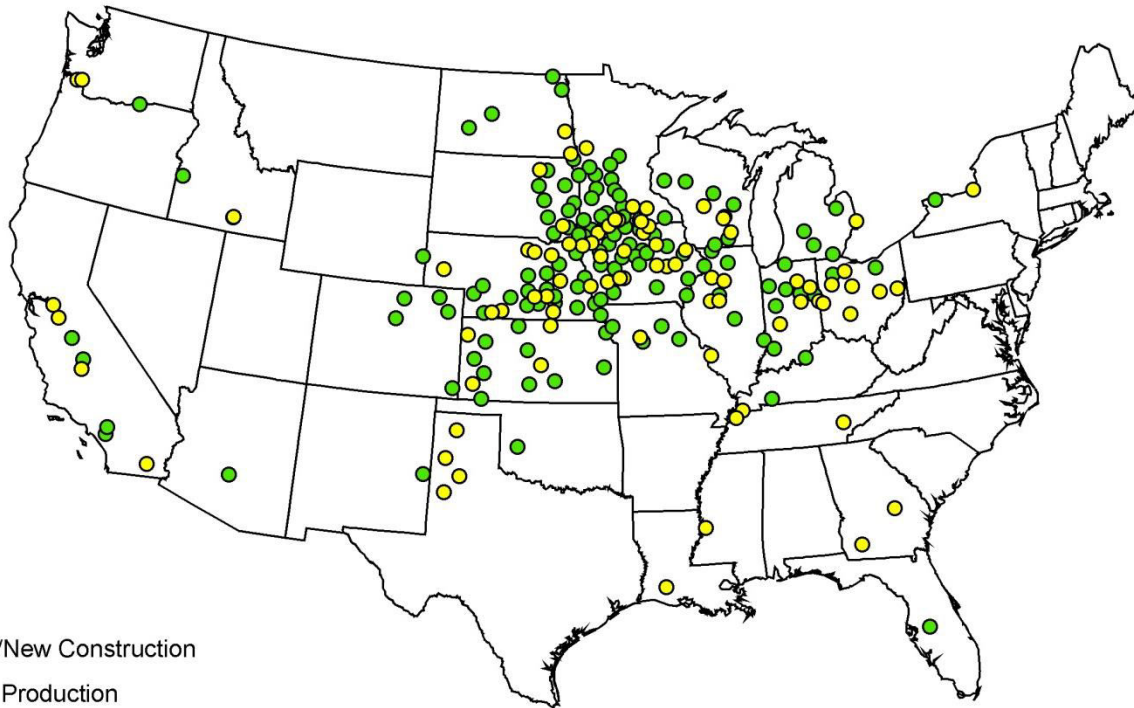
Source: National Biodiesel Board

Renewable Fuels Standard



Source: Renewable Fuels Association

U.S. Ethanol Industry



- Current ethanol capacity: 147 plants, 8.5 billion gallons/year

- Total capacity under construction and expansion: 5.1 billion gallons/year

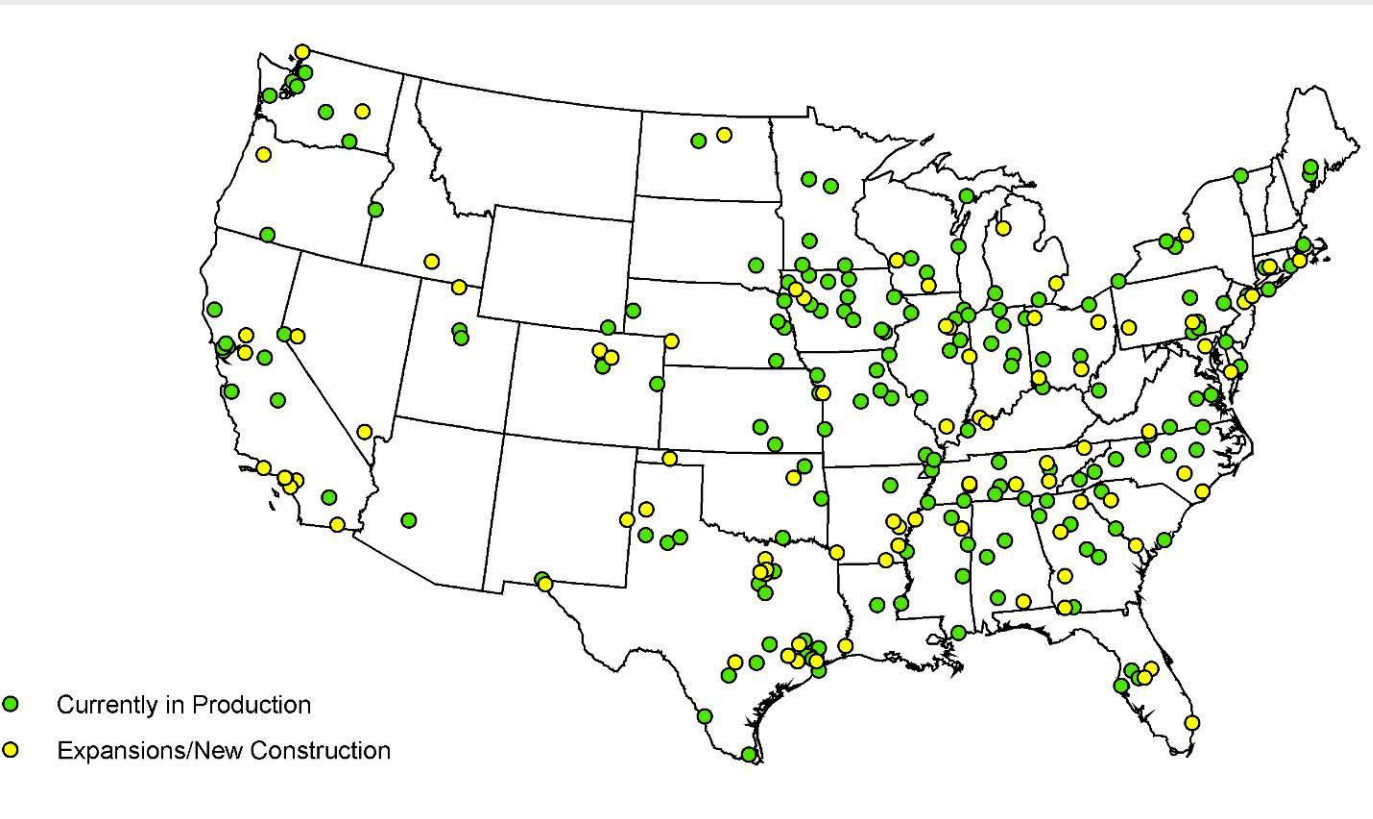
- 55 new ethanol plants and 6 expansion projects underway

- Source: Renewable Fuels Association

- 2.2 billion bushels of corn were used in producing fuel ethanol in 2006/2007 marketing year.

- 3.1 billion bushels of corn are expected to be used in producing fuel ethanol for 2007/2008 marketing year.

U.S. Biodiesel Industry



■ Current biodiesel capacity:
171 plants, 2.24 billion
gallons/year

■ Total capacity under
construction and expansion:
1.23 billion gallons/year

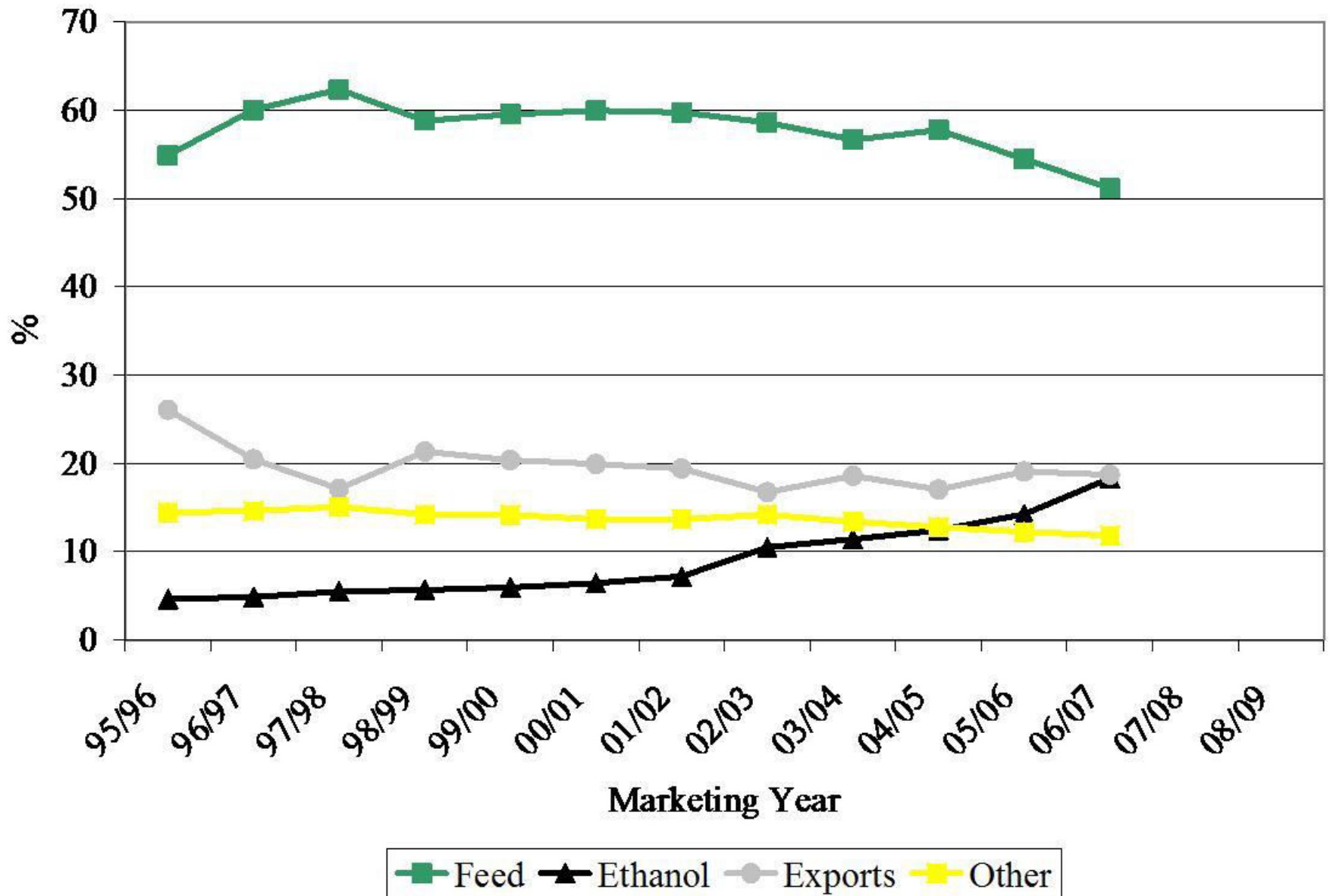
■ 60 new plants underway

■ Source: National Biodiesel
Board

■ 2.8 billion pounds of soybean oil was used in producing biodiesel in 2006/2007 marketing year.

■ 3.8 billion pounds of soybean oil are expected to be used in producing biodiesel for 2007/2008 marketing year.

Historical Corn Utilization



Two Views of the World

Using data derived from:

FAPRI 2008 Baseline

CARD 2008 Preliminary Baseline

Same modeling structure, different underlying assumptions

The Modelers Behind the Numbers

FAPRI – Food and Agricultural Policy Research Institute

Iowa State University: Miguel Carriquiry, Fengxia Dong, Amani Elobeid, Jacinto Fabiosa, Chad Hart, Dermot J. Hayes, Karen Kovarik, Jun Ruan, Simla Tokgoz, Tun-Hsiang (Edward) Yu

University of Missouri-Columbia: Julian Binfield, D. Scott Brown, Daniel Madison, Seth Meyer, William H. Meyers, Wyatt Thompson, Patrick Westhoff, Lori Wilcox, Abner W. Womack

University of Arkansas: Eric Wailes, Ed Chavez

CARD – Center for Agricultural and Rural Development

Iowa State University: Miguel Carriquiry, Fengxia Dong, Amani Elobeid, Jacinto Fabiosa, Chad Hart, Dermot J. Hayes, Karen Kovarik, Jun Ruan, Simla Tokgoz, Tun-Hsiang (Edward) Yu

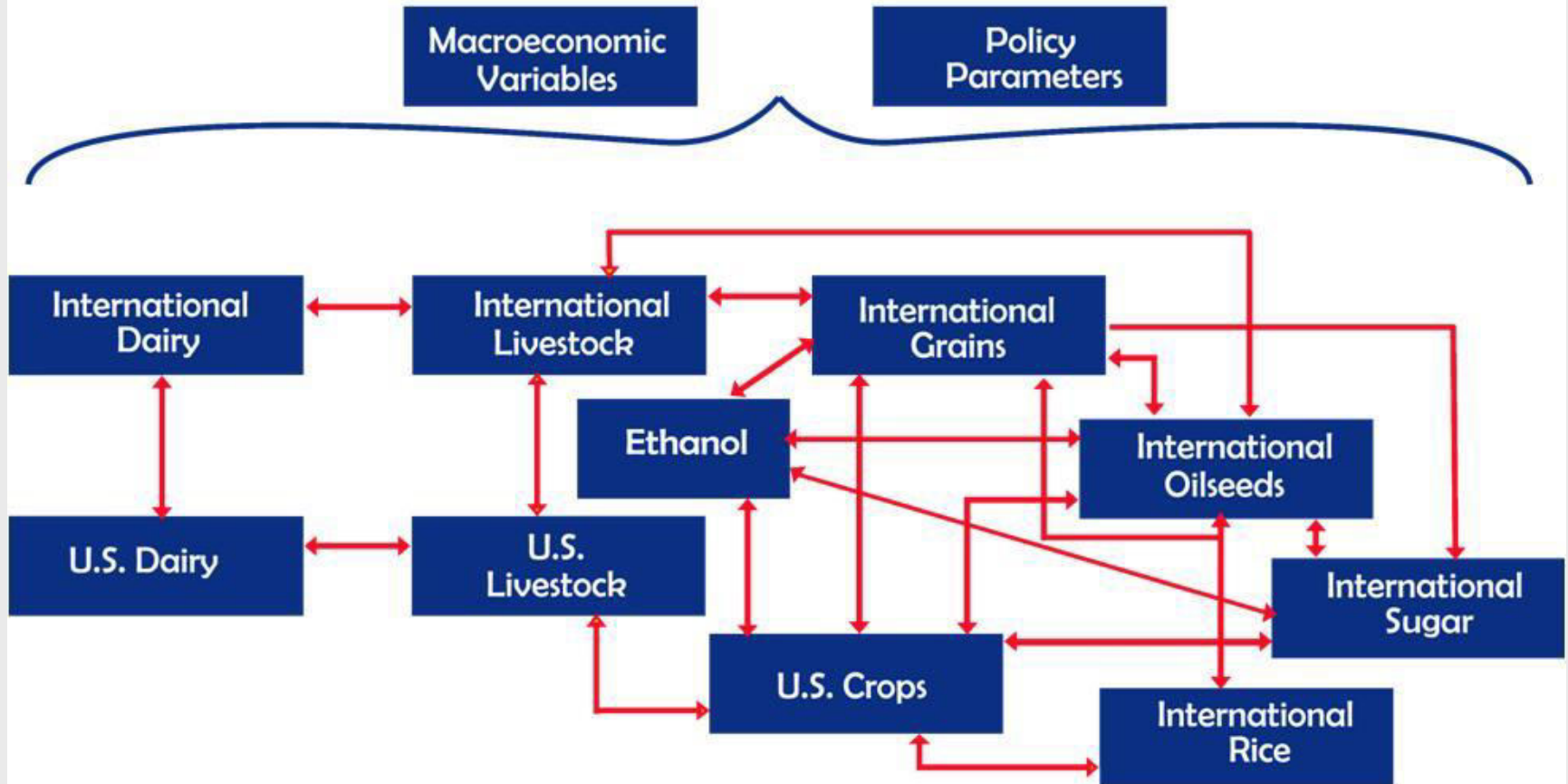
University of Arkansas: Ed Chavez

Texas Tech University: Suwen Pan

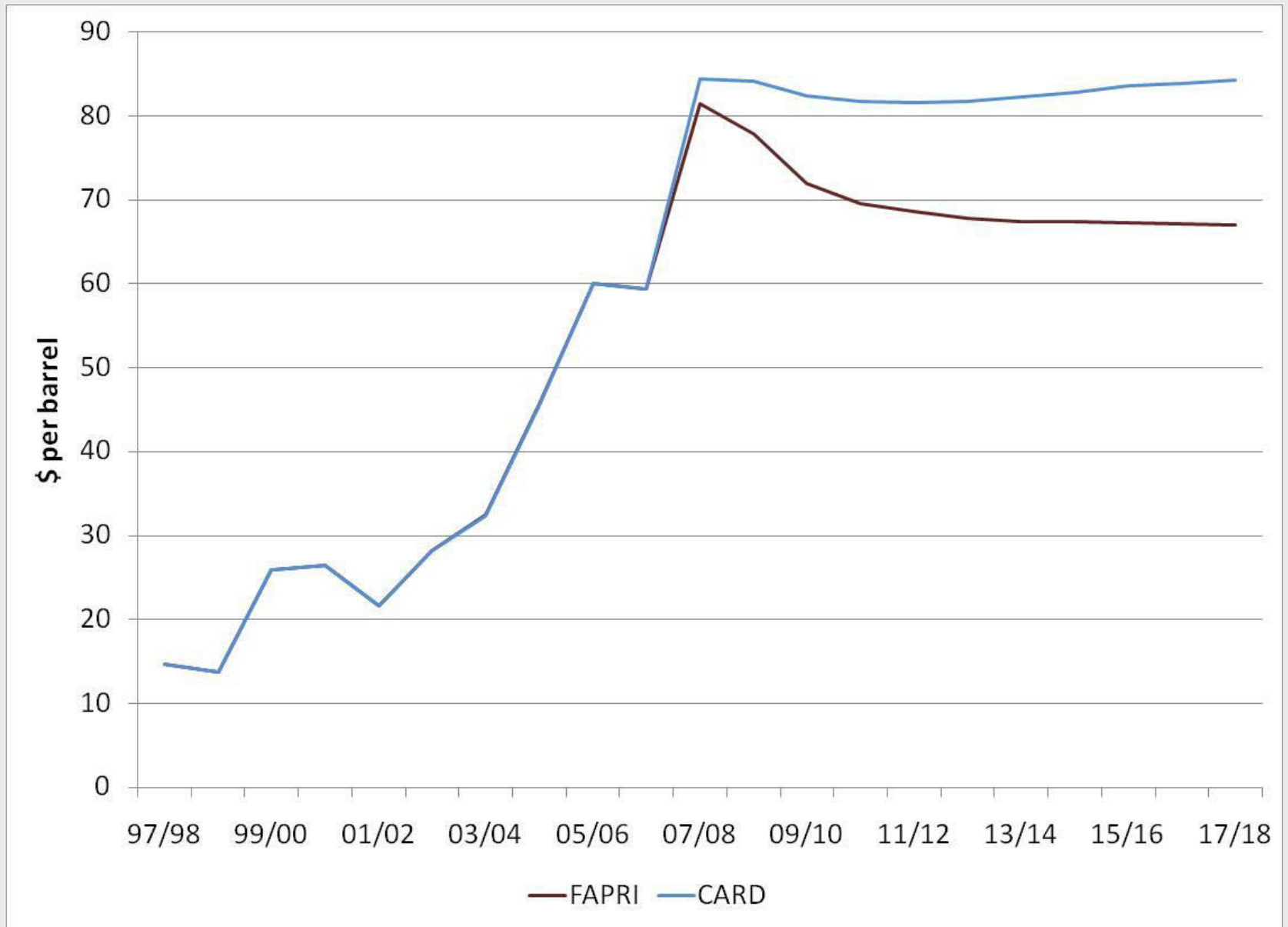
Model Interactions

Model Interactions

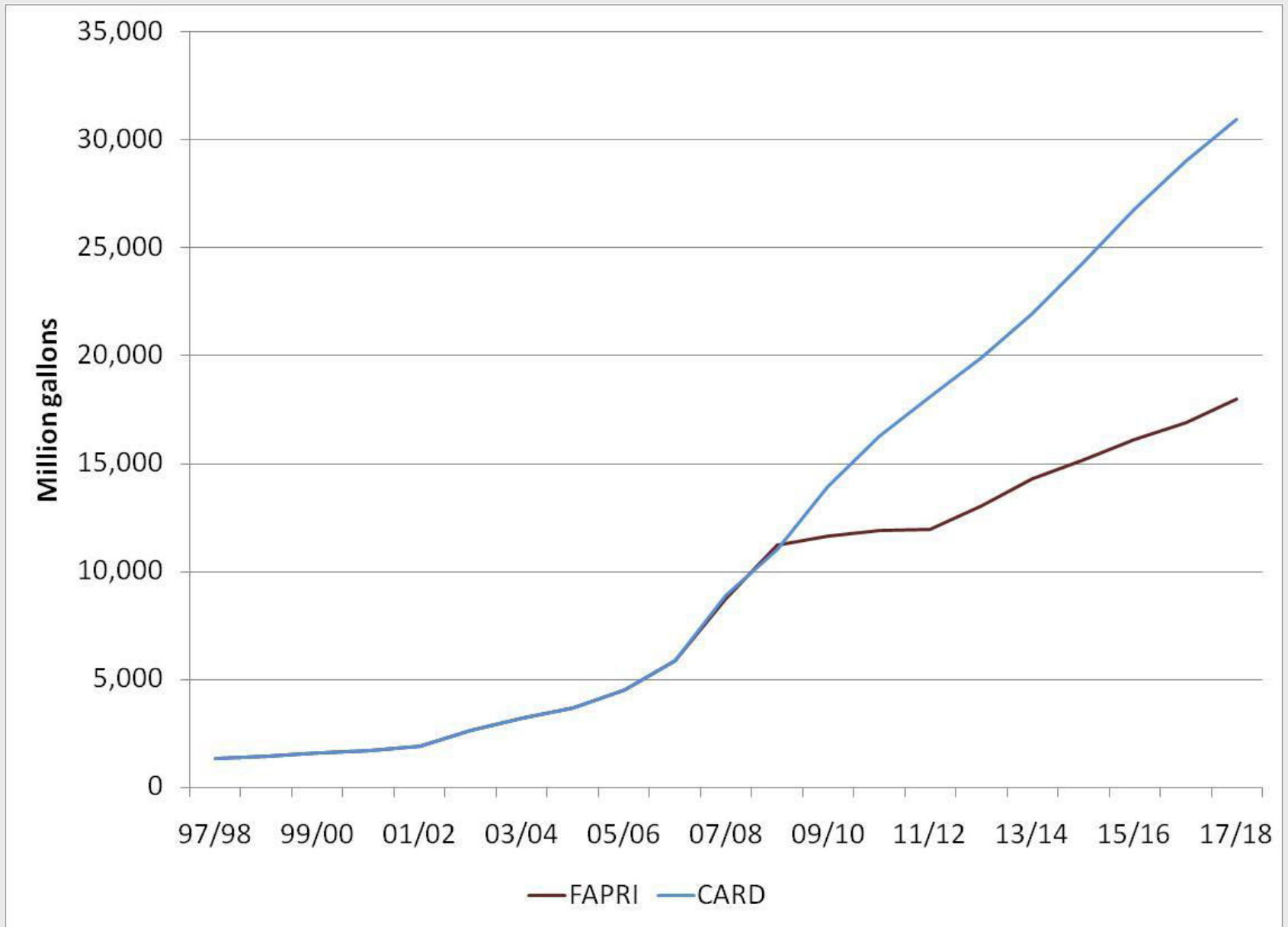
Trade, Prices, and Physical Flows



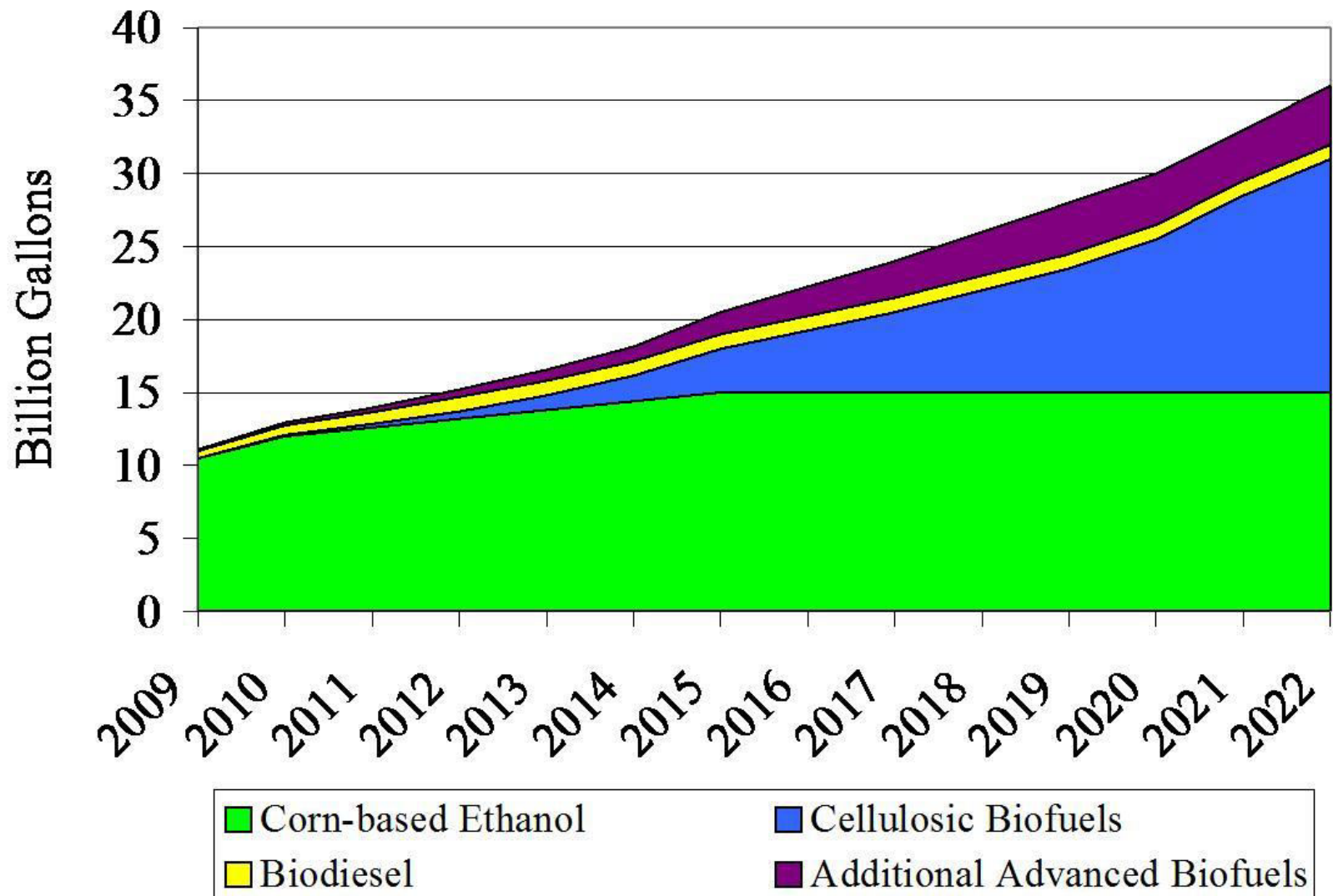
Crude Oil Price



Ethanol Production

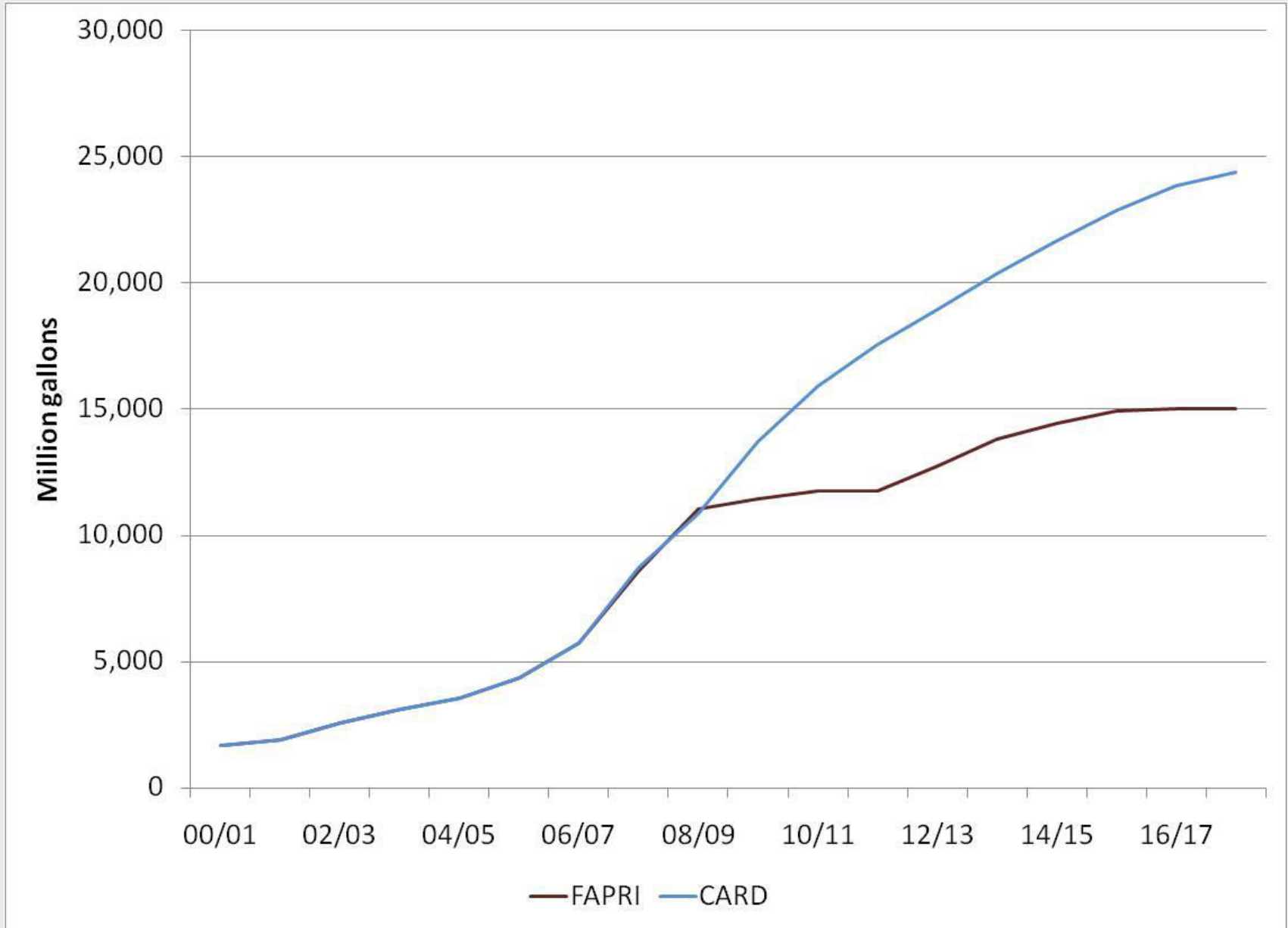


Renewable Fuels Standard

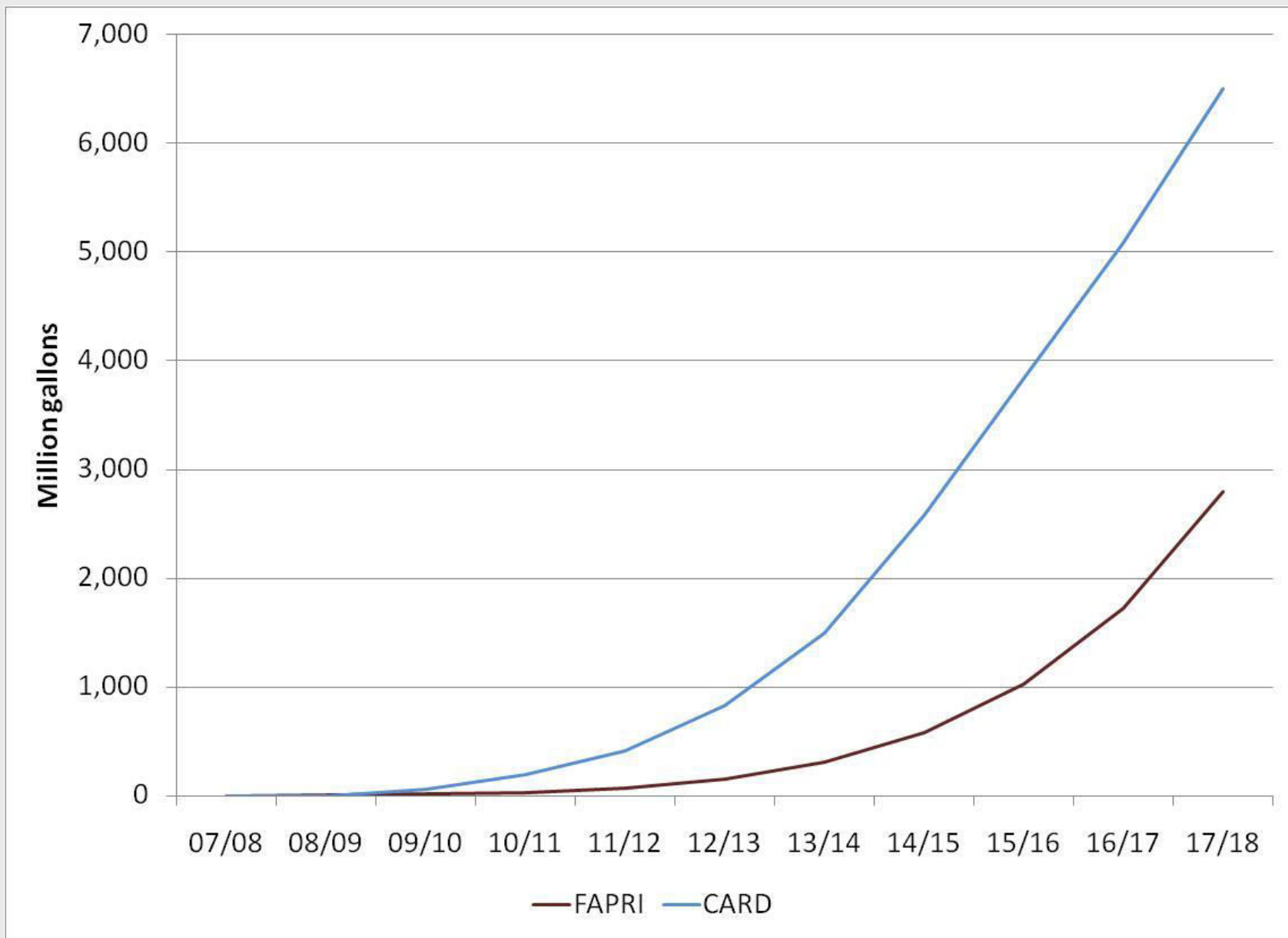


Source: Renewable Fuels Association

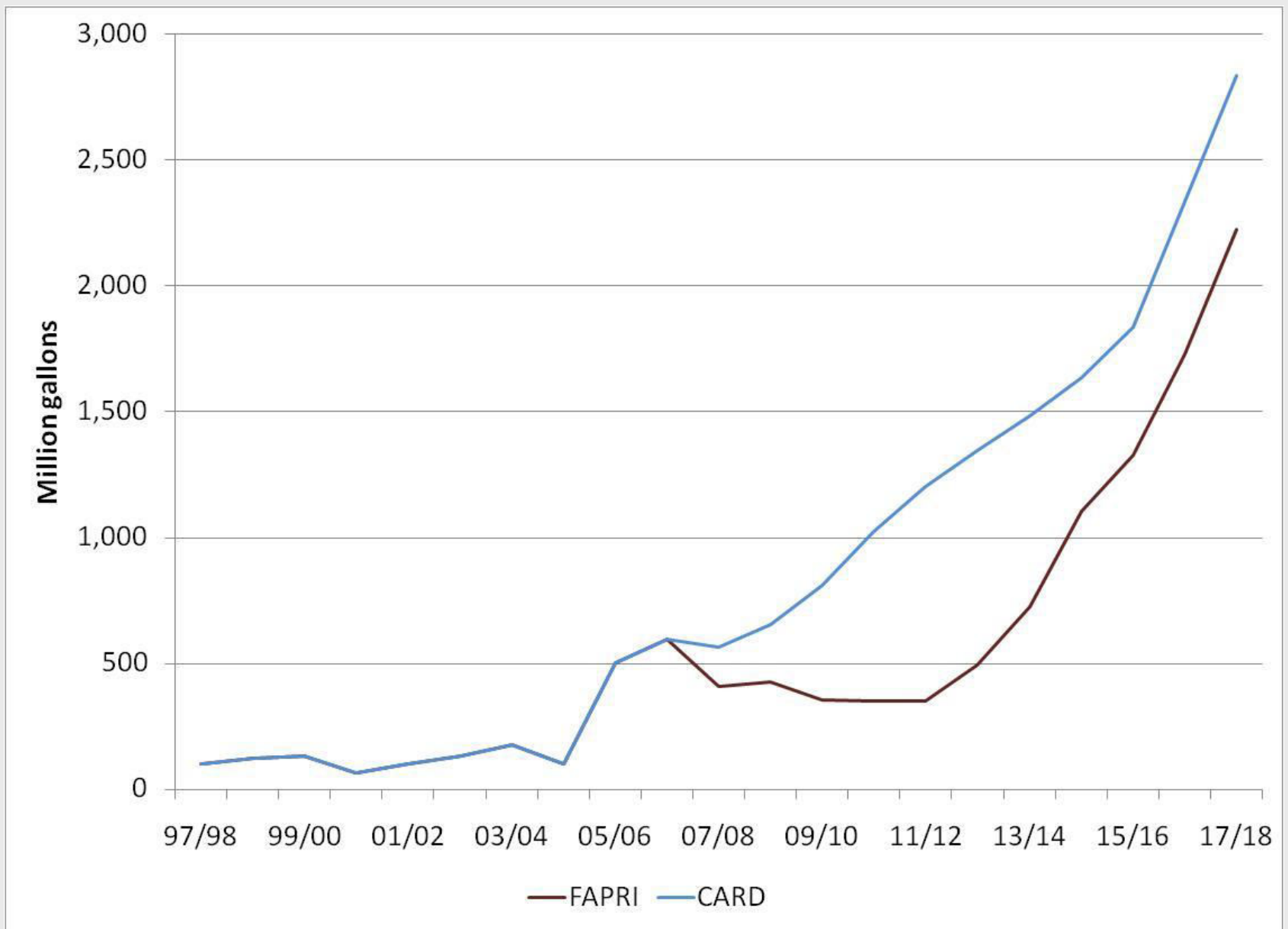
Corn-based Ethanol Production



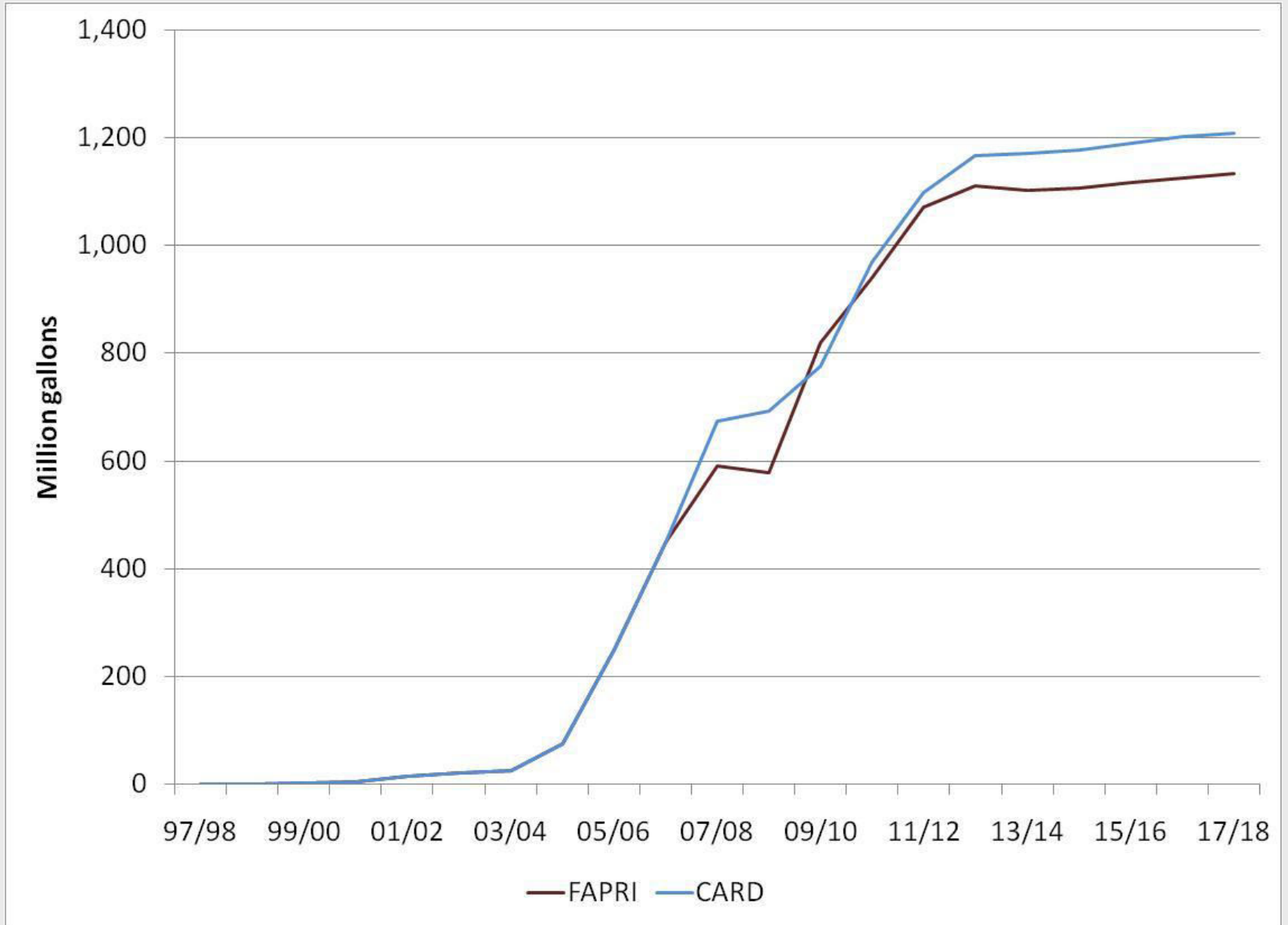
Cellulose-based Ethanol Production



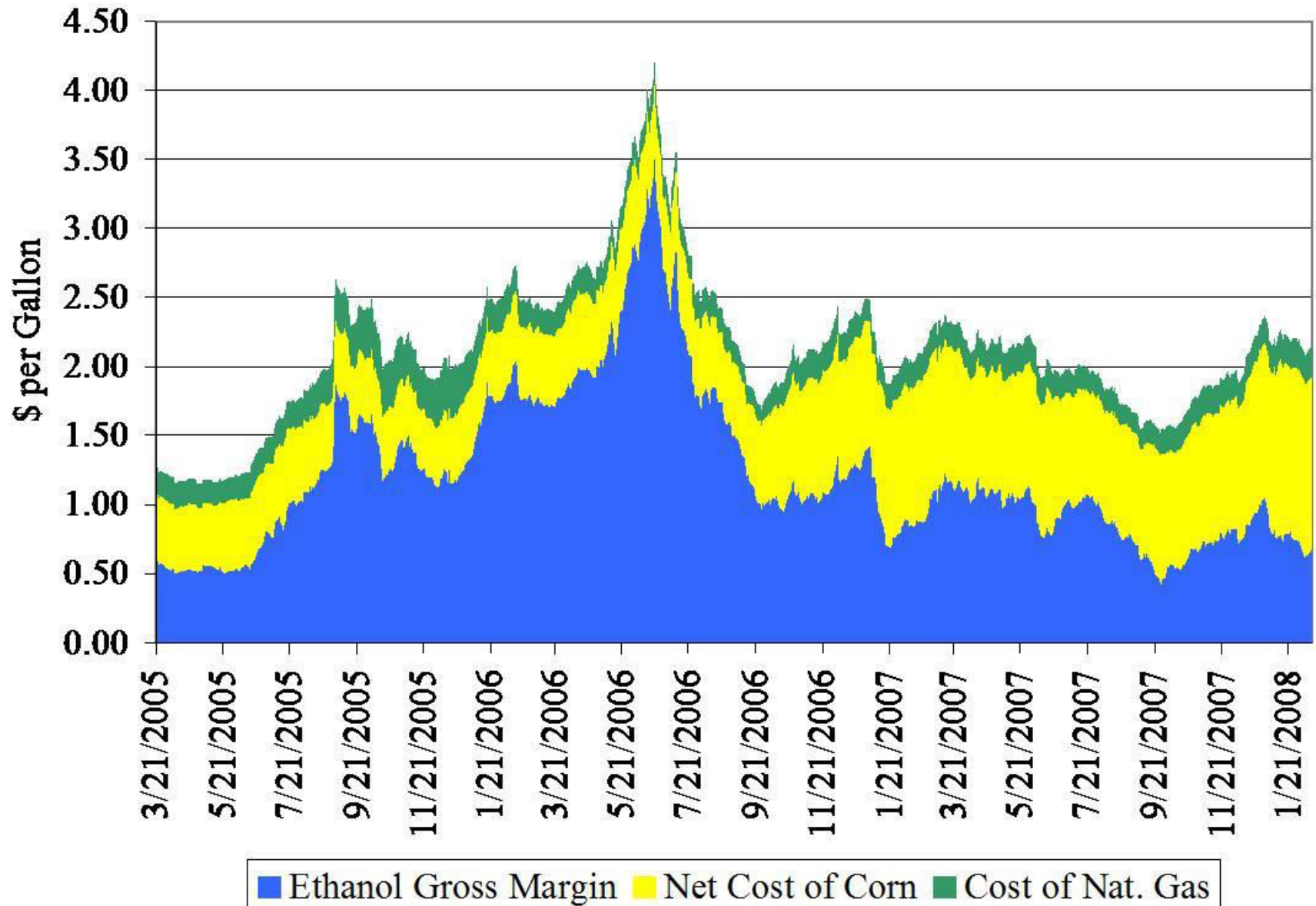
Ethanol Imports



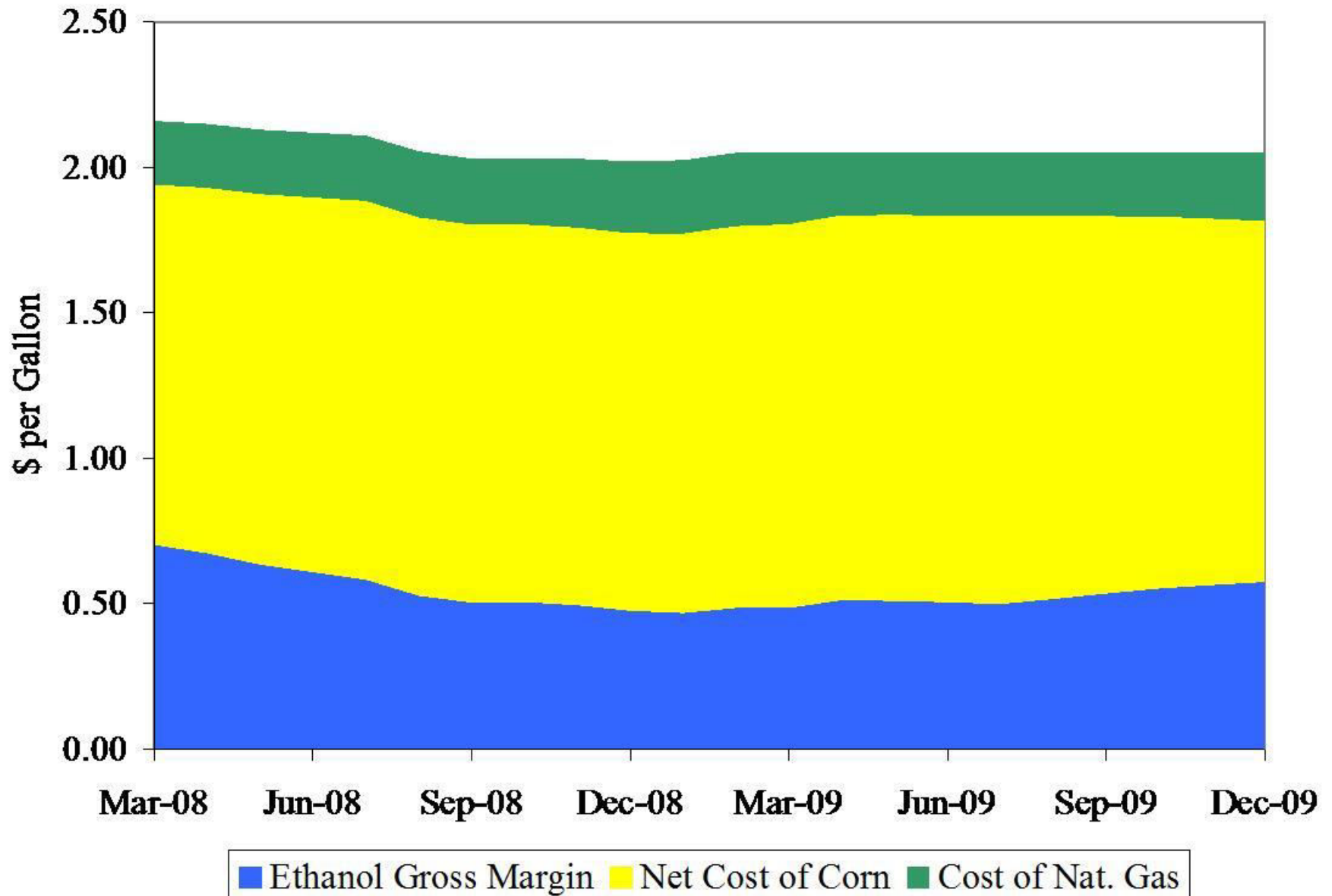
Biodiesel Production



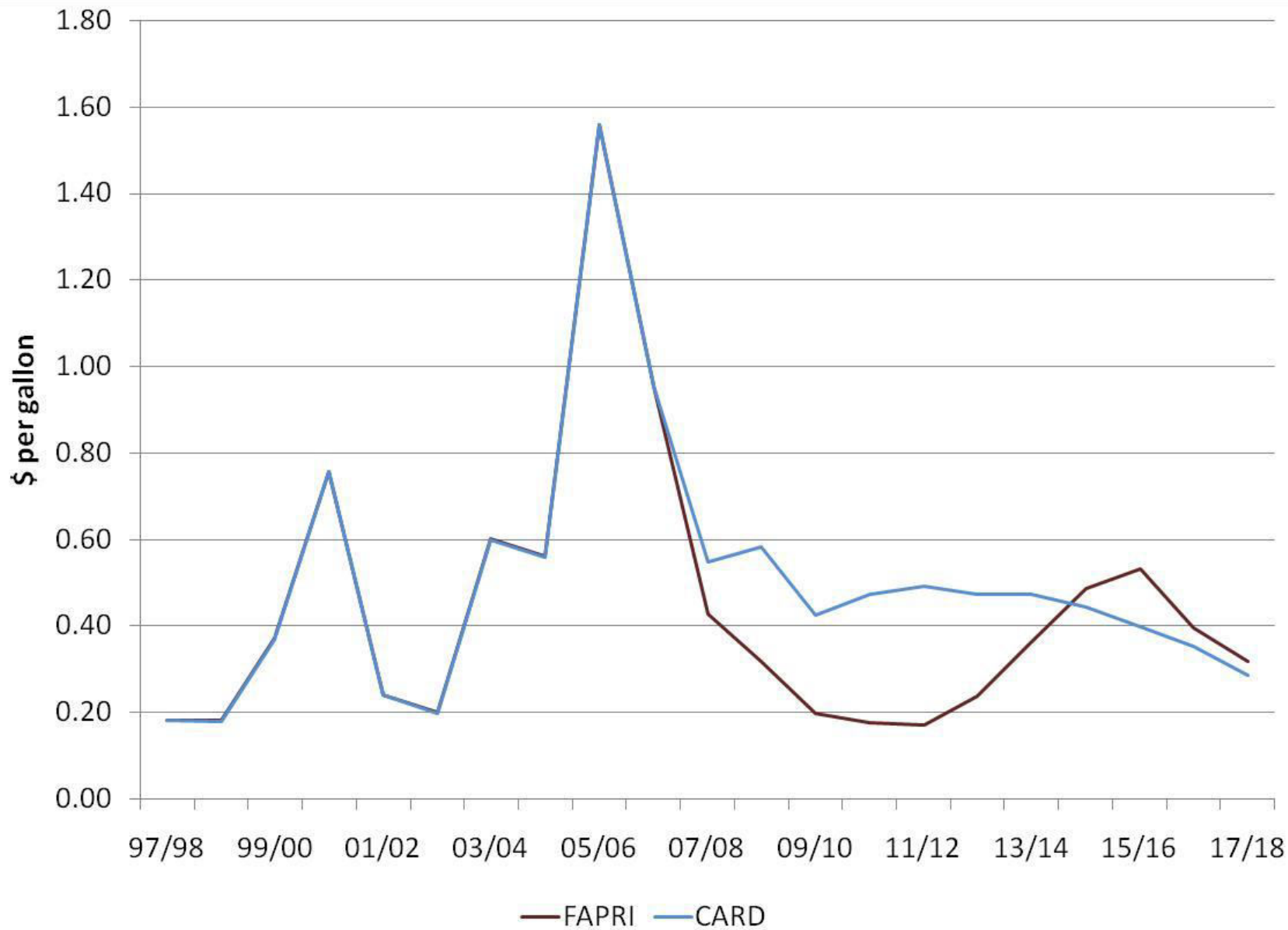
Historical Ethanol Margins



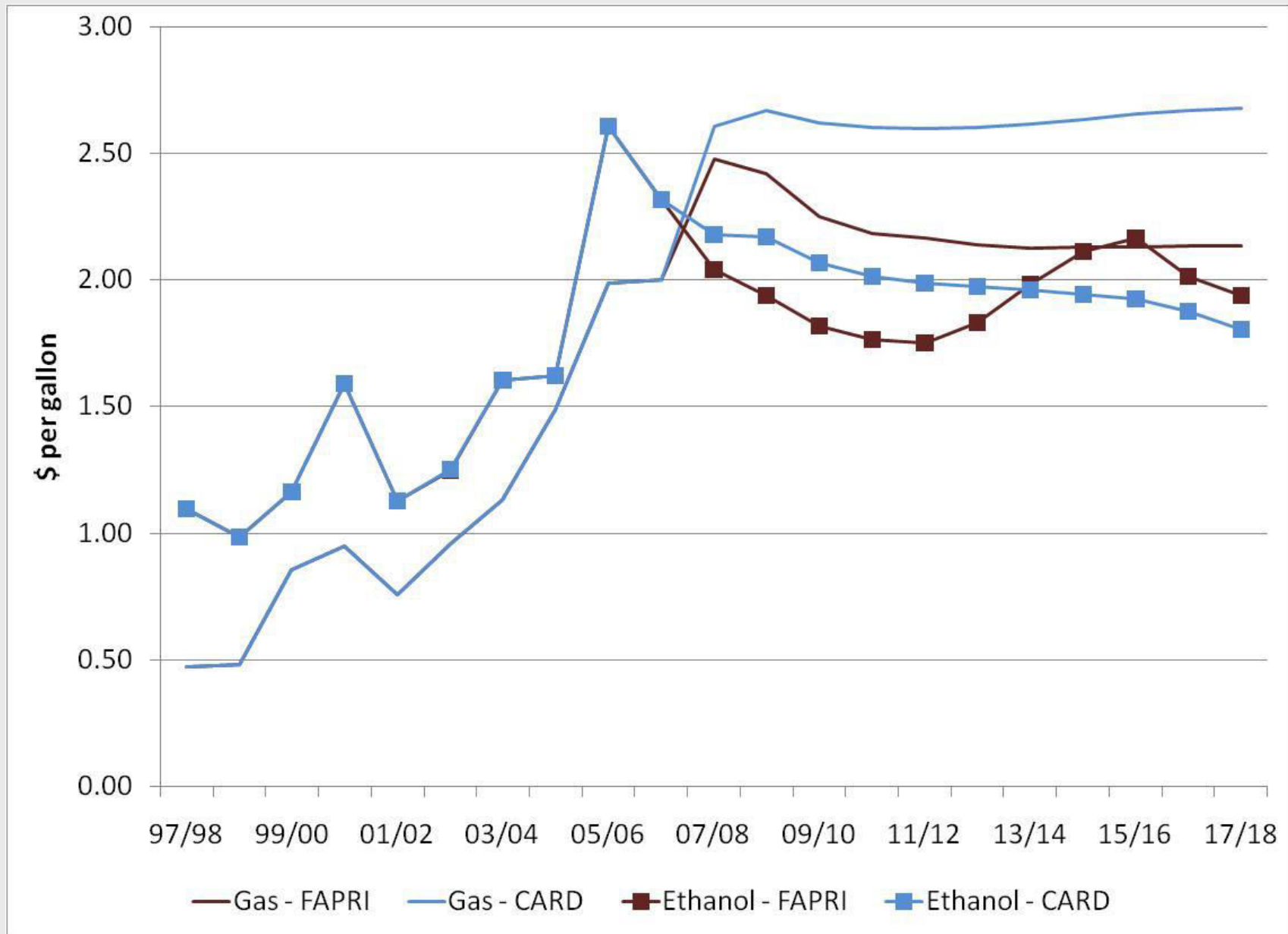
Projected Ethanol Margins



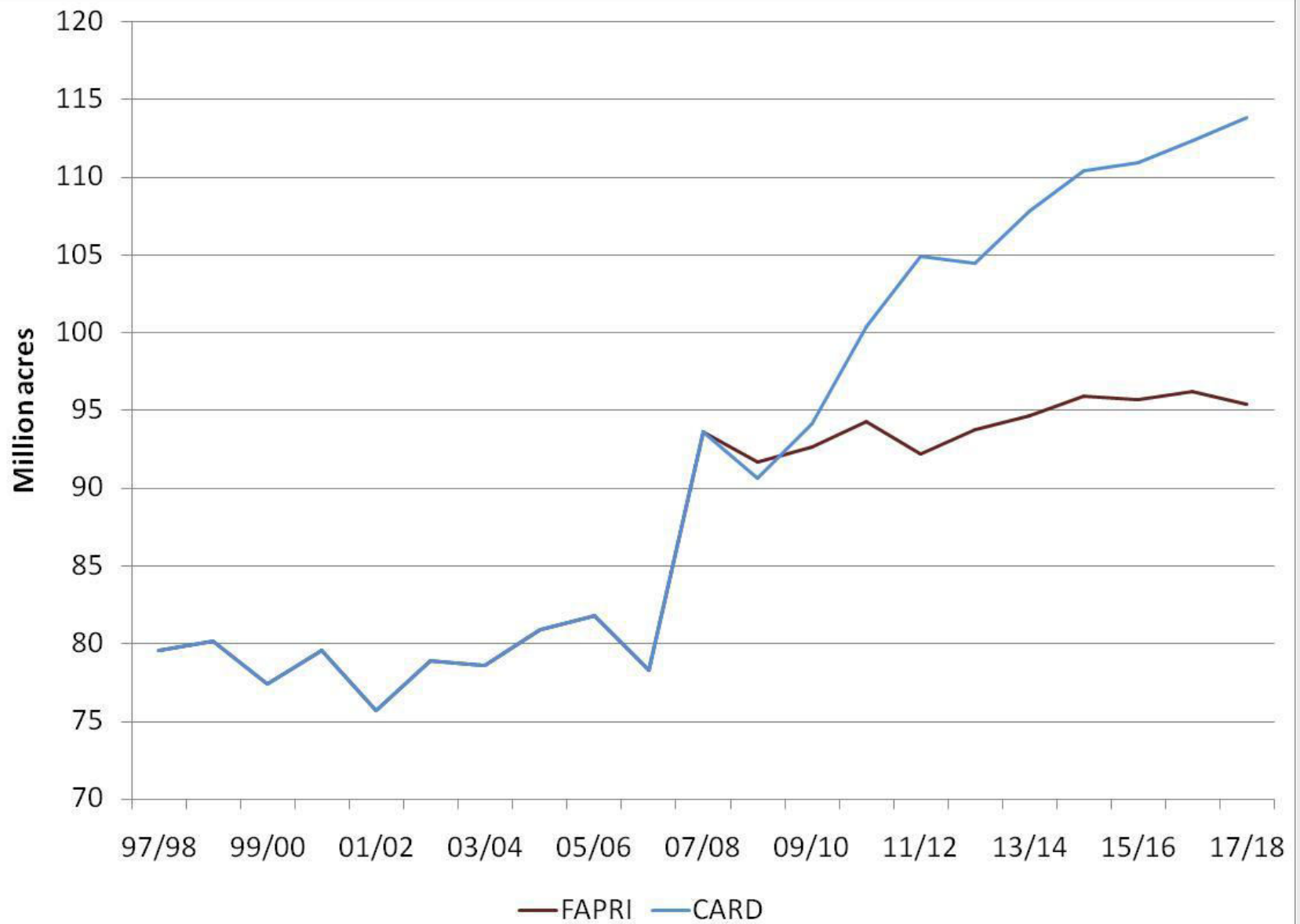
Dry Mill Ethanol Margins



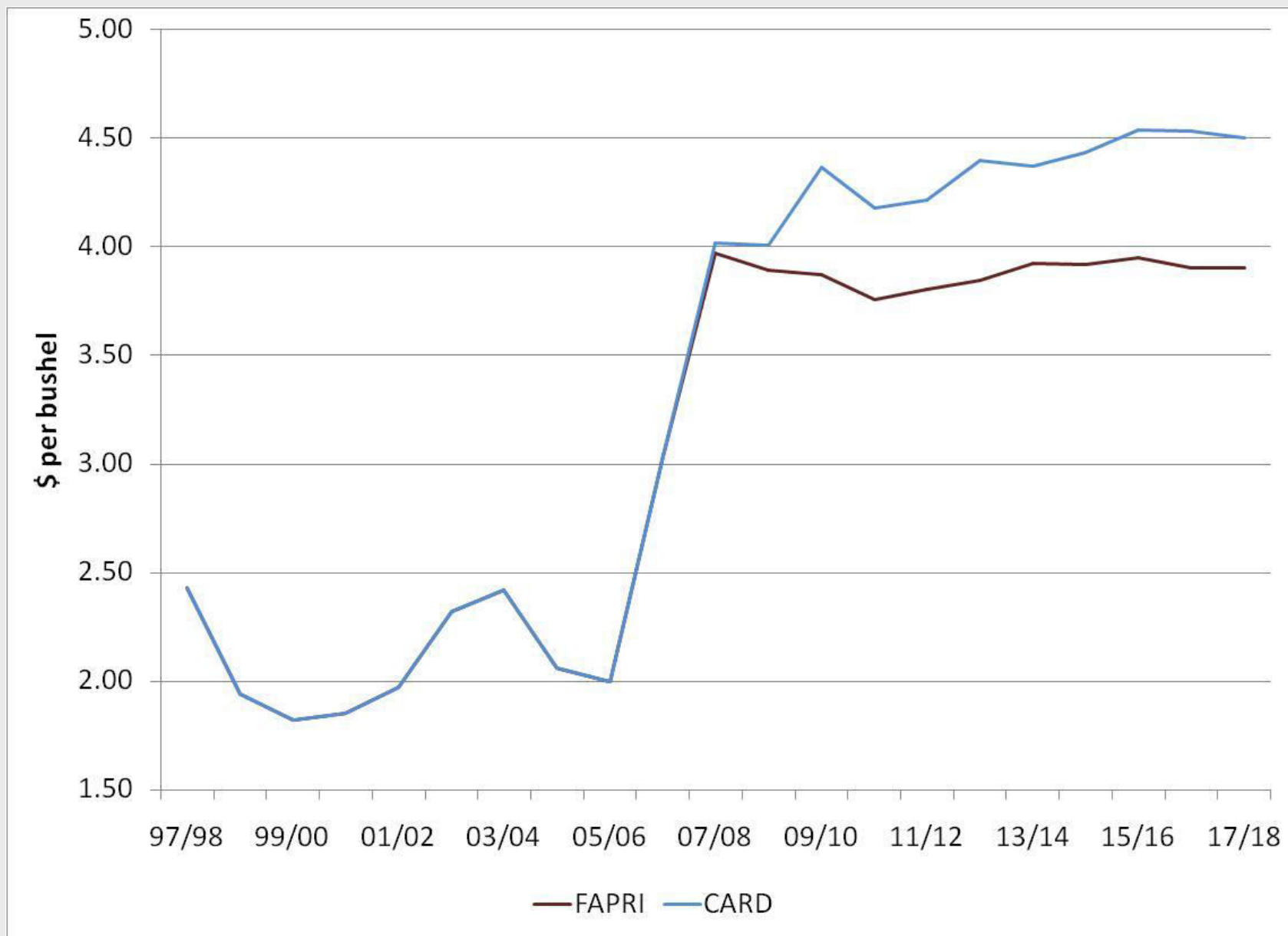
Rack Fuel Prices



Corn Acreage



Corn Farm Price



Soybean Acreage



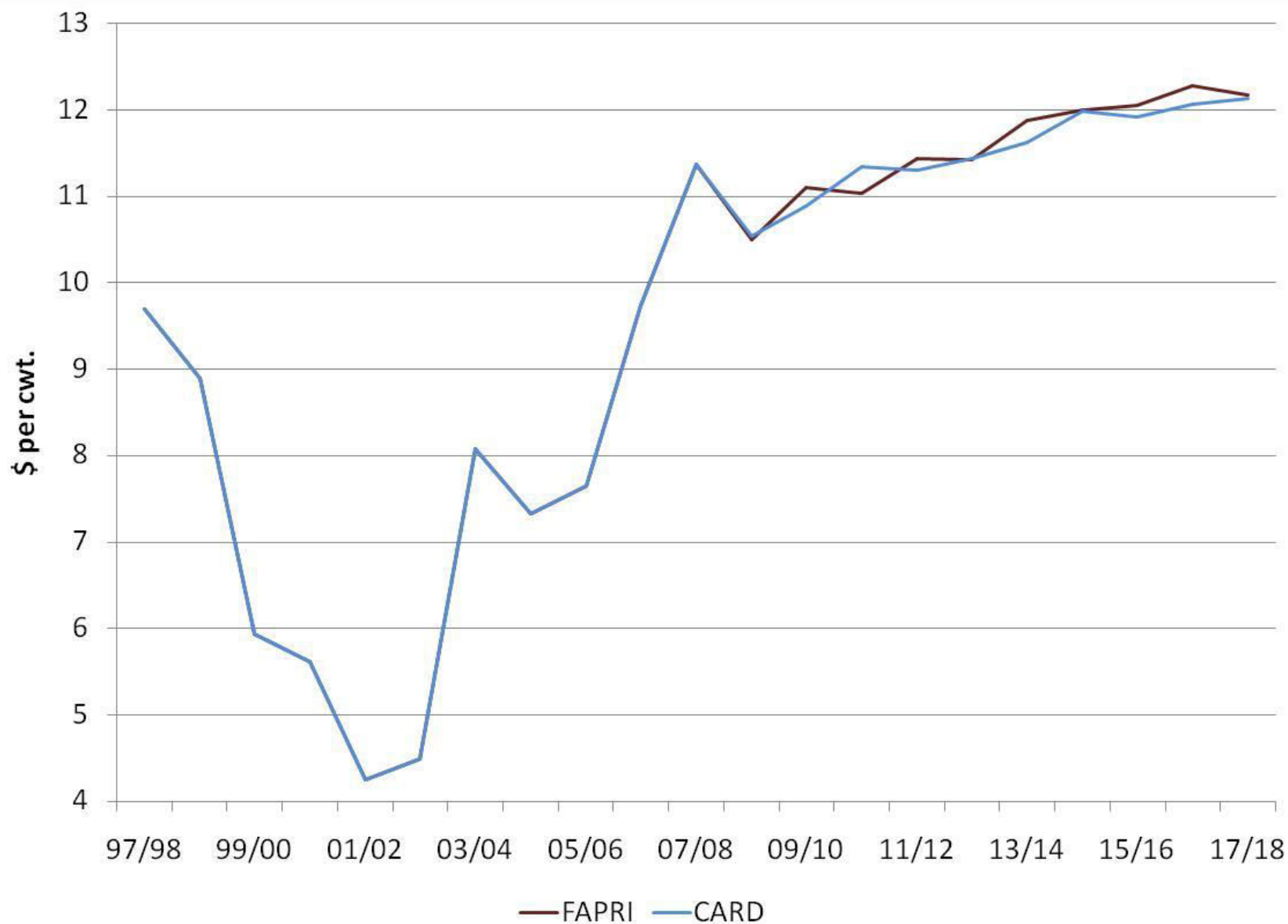
Soybean Farm Price



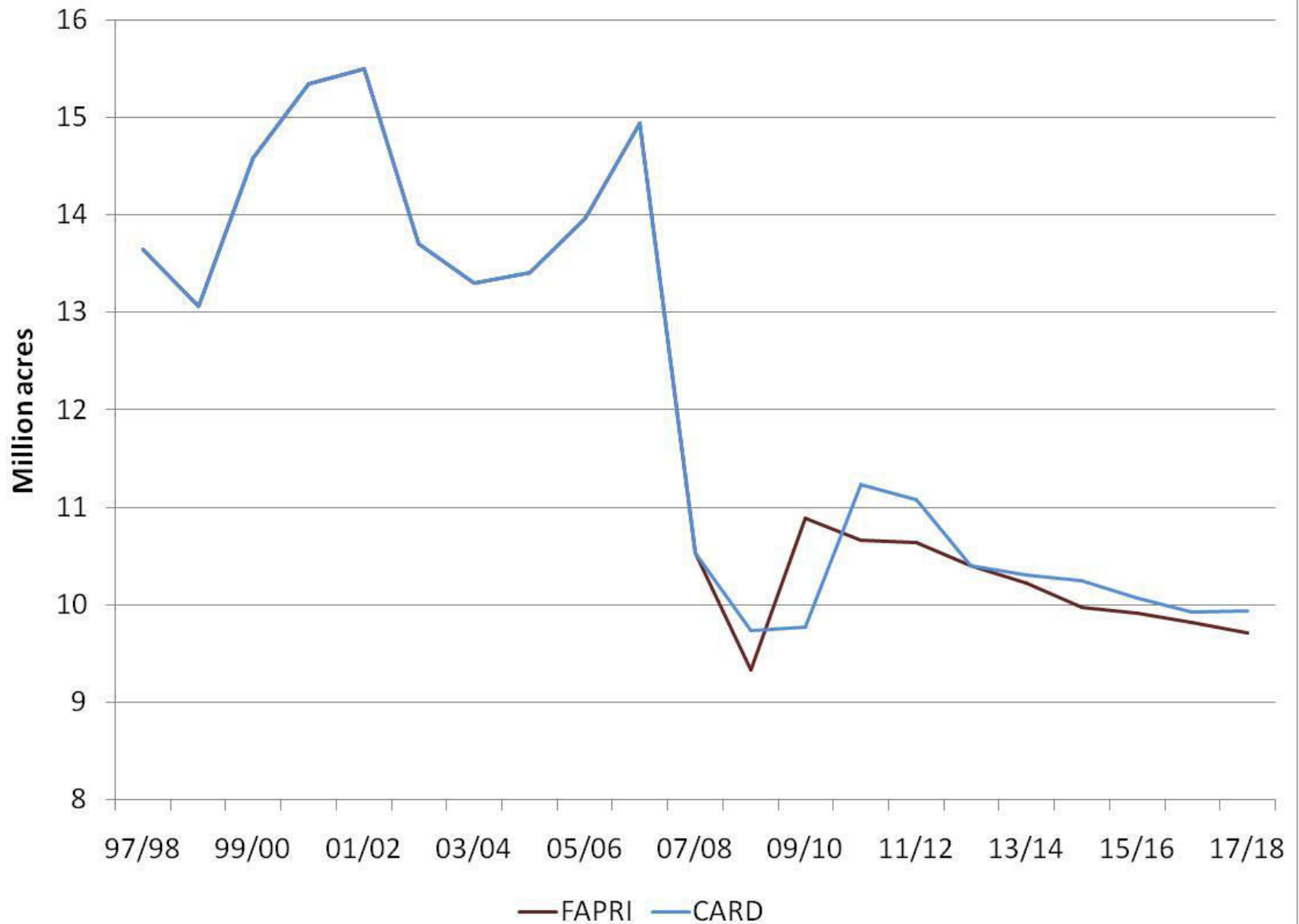
Rice Acreage



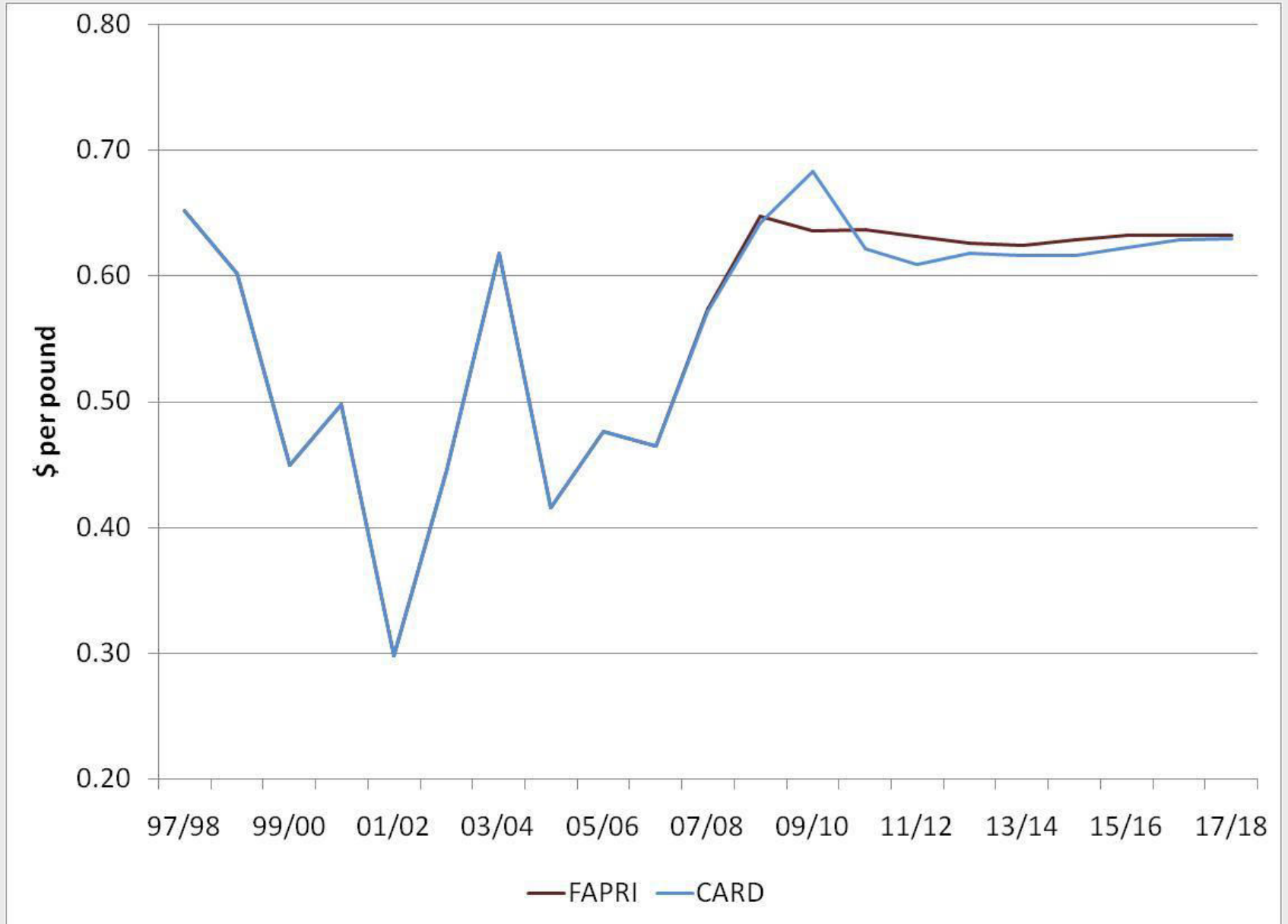
Rice Farm Price



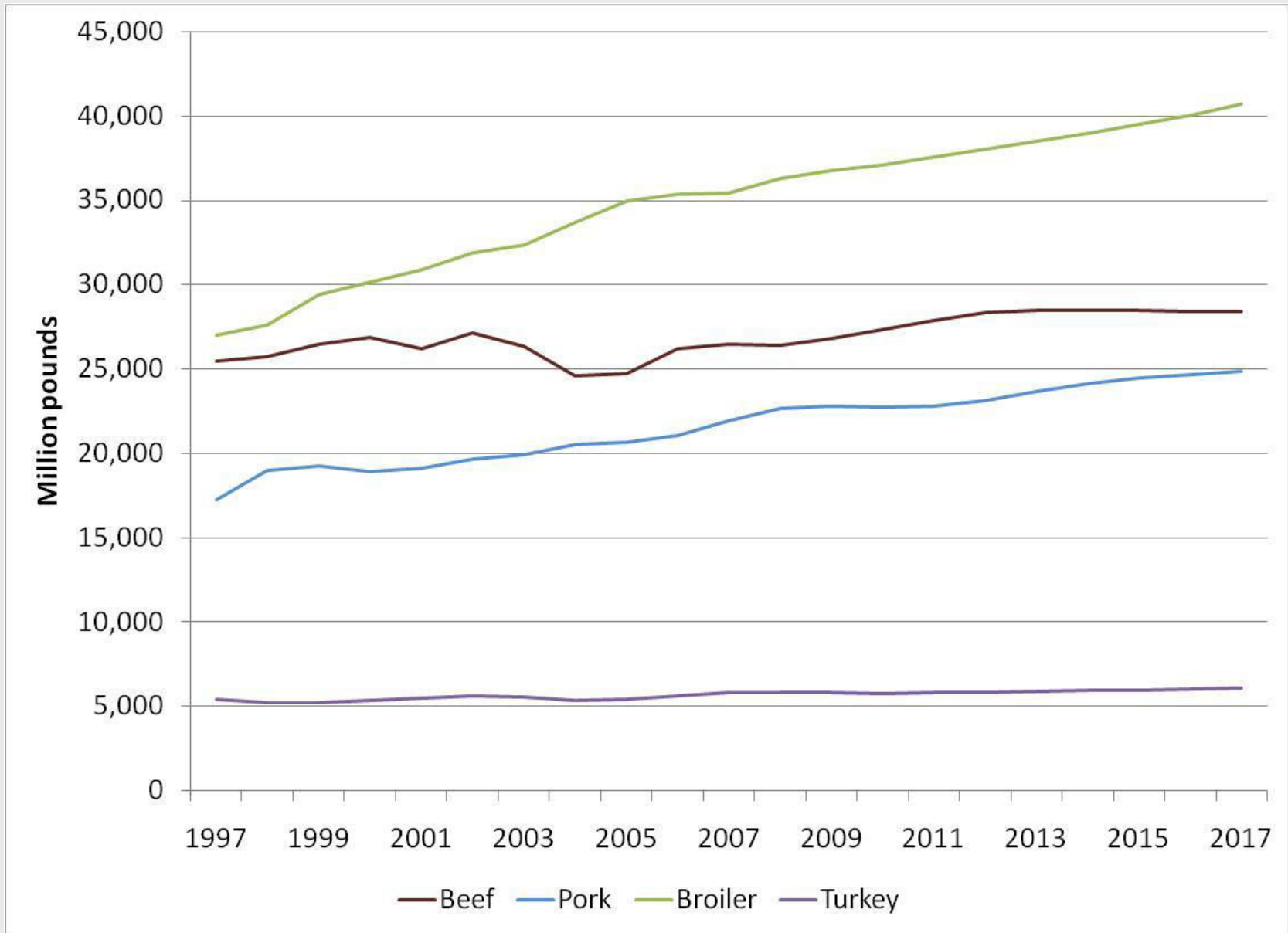
Cotton Acreage



Cotton Farm Price

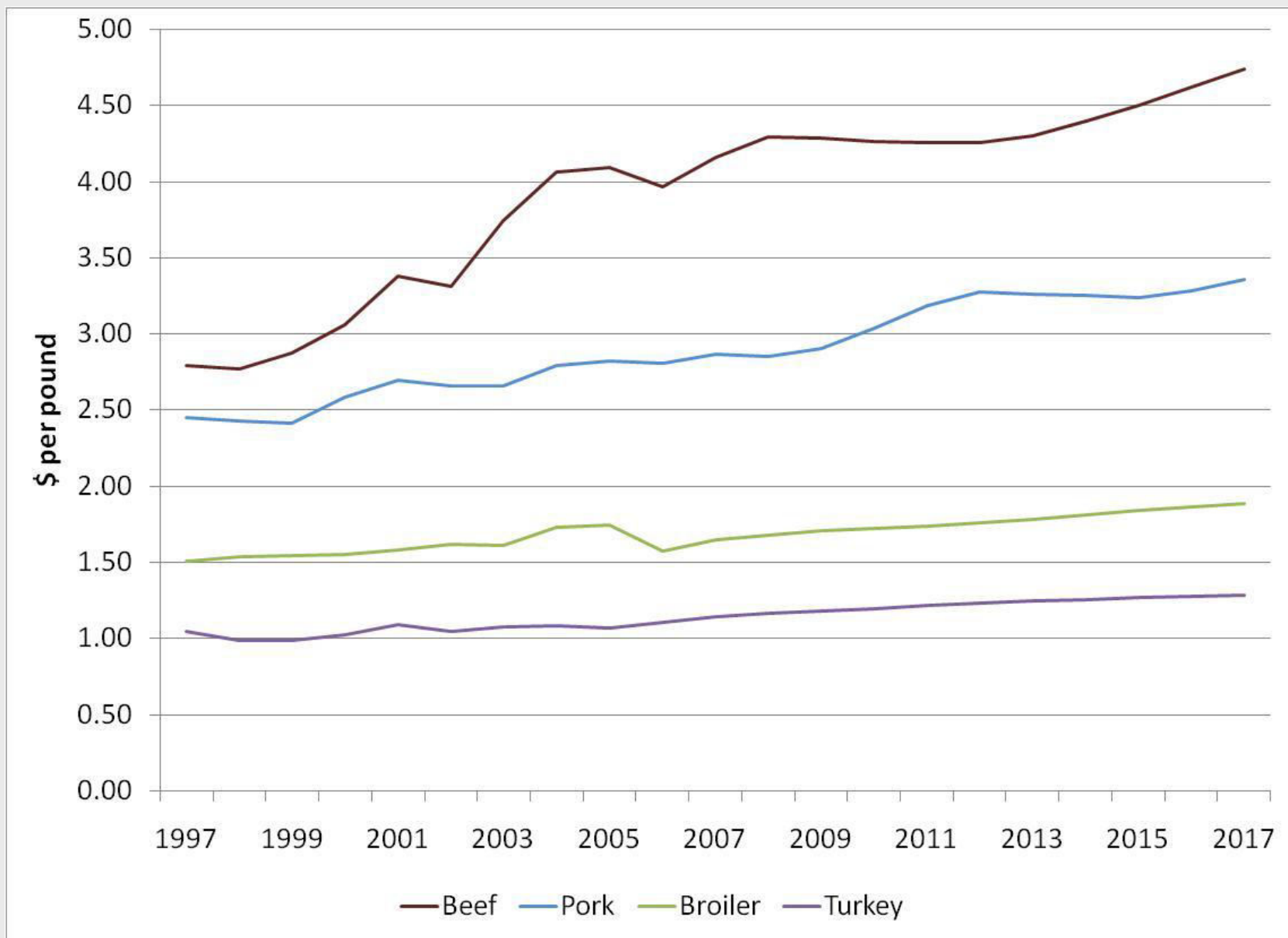


Meat Production



Source: FAPRI 2008 Baseline

Meat Prices



Source: FAPRI 2008 Baseline

Farm to Retail Food Price Spread

Food	Farm Value Share of Retail Food Price	Food	Farm Value Share of Retail Food Price
Eggs	53	Canned Corn	22
Beef	49	Sugar	27
Chicken	48	Wheat Flour	19
Milk	34	Bread	5
Pork	31	Corn Flakes	4
Orange Juice	33	Corn Syrup	3

Source: USDA-Economic Research Service, 2001

10 Observations about Ethanol

1. Ethanol production growth has exceeded expectations
 - But the industry is approaching a barrier point (10% of gasoline usage)
2. Gasoline prices are likely to remain high enough to support ethanol

Observations from Keith Collins, former Chief Economist for USDA

10 Observations about Ethanol

3. Ethanol margins can remain positive over a wide corn price range
4. Corn prices are likely to remain higher than usual
5. Given positive margins, ethanol plants will be competitive for corn at higher prices

10 Observations about Ethanol

6. To maintain all corn usage demands, the U.S. will need to dramatically expand corn acreage
7. Other countries will response to higher corn prices as well
8. With heightened demand and thin stocks, the corn market will be more volatile

10 Observations about Ethanol

9. Cellulosic ethanol has tremendous promise, but it will be several years before cellulosic ethanol truly impacts the energy markets
10. The merging of the energy and agricultural sectors will force substantial changes in both sectors

Thank you for your time.

Any questions?