

Antitrust and Private Sector Innovation in Agriculture

James M. MacDonald
University of Maryland
jmacdon2@umd.edu

International Consortium on Applied Bioeconomy Research
Ravello, Italy
July 9, 2026

Public Policy Affects Private Research Spending

- Patent and IP policy
- Tax policy
- Procurement

- But antitrust also matters, particularly regarding:
 - Mergers among rivals
 - Exclusionary practices
- The focus of this paper
 - With a focus on agriculture/agribusiness
 - What follows: why you should read the paper

Start: Some Emerging Agriculture Innovations...

New Precision Ag

- See and spray
- See and zap
- See and pick

Where “see” is imaging & identification via machine learning

Autonomous vehicles

- For field tasks
- Smaller—implies CRS?

Bio-fertilizers

- Microbes
 - For nitrogen absorption
 - Sprays or seed coatings
 - Gene-edited, or not

Bio-pesticides

- Gene-edited microbes
 - Sprays based on RNA interference
 - Aimed at beetles, moths, fungi

The Products All Require Distribution Networks

- Since they sell to farmers...
- The distribution network can include:
 - Sophisticated information & guidance
 - Services—repair, maintenance, operation
 - Credit
 - Specialized mixes
- The products require manufacturing/engineering expertise
 - To produce at scale

How Do Innovative Entrants Create Distribution Networks?

Merger: Blue River (See and Spray) acquired by John Deere

Joint Ventures (JV):

Agrospheres (biofungicides) enters joint ventures (JVs) with FMC and BASF to manufacture and market.

Pivot Bio (biofertilizers) enters JV with Aurora Cooperative to distribute in KS, NE

Internal Investment:

Greenlight (biopesticides) builds its own manufacturing facility

Smaller Networks: Sell to Independent Custom Service Providers

How Should Antitrust Policy Handle Mergers in Innovative Industries?
How to Handle Exclusionary Practices Aimed at Dealer Networks?

Motivation: Recent US Exclusionary Practices Cases

(brought by the Federal Trade Commission--FTC)

• FTC vs. Syngenta/Corteva

- Pesticide makers
 - Sell through distributors
 - To dealers to farmers
- As products come off patent...
 - And generics enter...
 - S&C offer distributor rebates
 - Based, inversely, on sales of generic rivals
 - Who do some local innovation on their own
- FTC argues that S&C use their monopoly power to deter entry, extend monopoly

• FTC vs. John Deere

- Maker of tractors & combines (60% share)
 - Sells through dealers
- Equipment breaks down
- Farmers often self-repair or use ISPs.
 - But Deere only provides diagnostic software to its dealers
 - Those dealers use Deere replacement parts
- Allegation: Deere policy extends monopoly power to service & parts markets

Notice the common features in the cases

- Manufacturers with a dominant position...
 - In an innovative industry with R&D
 - Who sell through dealer networks
- Following practices alleged to exclude rivals and extend or create monopoly power
- I contend that this will become more common
 - With innovative private entrants
 - Who will need dealer networks

One Important Question

- Do the practices deter rival entry and competition?
 - And innovation by rivals
- Or do they further innovation by incumbents?
 - By protecting them from competition?
- The issues involved are illustrated most clearly in mergers among rivals
 - So let's consider merger policy

US Antitrust Policy Prohibits Mergers Whose Effects “May Be Substantially To Lessen Competition”

- Traditional enforcement focus is on pricing
 - Will this merger allow the combined firm to raise price?
Key issues:
 - How will the merger change concentration?
 - How easy is entry in response to price increase?
 - How easily can buyers switch to other products or providers?
- An additional focus here:
 - **Competition in innovation**
 - Will the combined firm ↓ R&D and ↓ resulting innovation?
 - An important question in seeds, agri-chemicals, equipment

Growing Relevance in 21st Century Agribusiness

- Precision Planting
 - Deere's acquisition of Monsanto's high-speed planter business (Deere's only rival)
 - US DOJ successfully opposed (2016)
- The big seed/chemical mergers in 2016-18
 - ChemChina's acquisition of Syngenta
 - Dow-Dupont merger
 - Bayer acquisition of Monsanto
 - Approved, subject to divestitures
- In each...
 - Competition in pricing and in innovation
 - Very few 20th c. merger cases featured innovation rivalry concerns
 - Far more common, economy-wide, since 2000

The Innovation Angle is Subtle & Tricky

- Private R&D spending is conducted primarily by large firms in concentrated industries
 - We give innovators patent protection
 - Patents provide successful products with temporary monopoly
 - That's the incentive to get firms to spend money on research
 - Which otherwise could simply be copied by rivals
- But rivalry between oligopolists also drives ongoing incremental innovations & product improvements
 - That was a message in *Precision Planting*

It's common here to contrast:

- Schumpeter
 - Research, innovation, & economic growth arises from firms who have protection from competition
 - Patent protection, concentrated markets
- Arrow
 - A new product takes sales from rivals, and from an incumbent innovator's own existing products
 - Monopolists realize that a new product only cannibalizes their own sales
 - Thus, a monopolist has a weaker incentive to invest in R&D than a duopolist would have
 - And R&D rivalry matters
 - Throw in Hicks (1935): "The best of all monopoly profits is a quiet life."

A Policy Resolution in the Seed/Chem Mergers

- High concentration matters
 - 3 to 2, 2 to 1 mergers raise objections
 - 4 to 3? Not clear
 - Field crop seeds, vegetable seeds, traits, protectants
- Competition in *research programs*?
 - Separately from product rivalry...
 - Some language around it, but loose
 - How to define competing research programs?
 - How to define research rivalry?
- Entry and consumer switching matter
 - As in pricing competition
 - But high entry barriers in R&D-intensive markets

Back to exclusion and vertical linkages

- A violation requires a dominant incumbent
 - Dominance (monopoly) defined as 50-60% market share
 - Why? Go back to the Deere allegations...
 - Suppose Deere held only 25% of the market...
 - Then their software tool strategy might lose them customers who had a choice...
 - ...if the strategy was not in customers' interest
 - "Customers who had a choice" also implies something about barriers to entry and customer switching costs
- So US antitrust exclusion policy focuses on incumbents with monopoly power
 - Different from economists' conception of market power

But exclusion violations also require:

- The practice creates or extends monopoly power
 - Either extends via entry deterrence, or creates in a related market
- Causes injury to at least one group of market participants
- Not offset by claimed efficiency justifications
 - Always claimed...may sometimes be true
- Be correctable through antitrust action

Back to practices: what should we look out for?

- Incumbent producers with monopoly power
 - Legally, high market shares
 - Why?
 - “Incumbent” may be a different product
 - Pesticide makers, facing a biopesticide or seed & spray entrant
 - Fertilizer manufacturer, facing a biofertilizer entrant
- Can they raise dealer acquisition costs of entrants?
 - Rebates to existing dealers
 - Can they extend to custom service providers?
 - Exclusive arrangements

Mergers Again

- Focus has been on mergers between leading rivals
- But what about acquisitions of innovative entrants?
 - For example, Deere's purchase of Blue River...
 - Clearly combines complementary assets
 - Prospect of sale incentivizes small firm R&D and innovation
 - In pharmaceuticals, evidence of “killer acquisitions”
 - Purchase to kill rival research program
 - A small fraction of acquisitions: can we identify problematic ones? Will they be relevant in agribusiness?

Conclusion

- I expect exclusion cases to become more prevalent in agribusiness
 - Because of emerging private innovations reliant on distribution networks
 - And because they threaten dominant incumbents
- How we handle them will matter for innovation and productivity growth
- There's a great deal of uncertainty regarding
 - Policy
 - Conceptual matters
 - Empirical evidence