



**Governing Value Chain Disruption in
Agriculture and Agri-foods:
A Behavioural Approach to Assessing
Policy Implications**

A Presentation by Graeme Jobe

On-Farm



Off-Farm





On-Farm

Developing

Generates and uses ag-data

Primary ag-data use

Positive-sum



Off-Farm

Early days

Uses ag-data

Secondary and Tertiary ag-data use

Positive-sum & Zero-sum

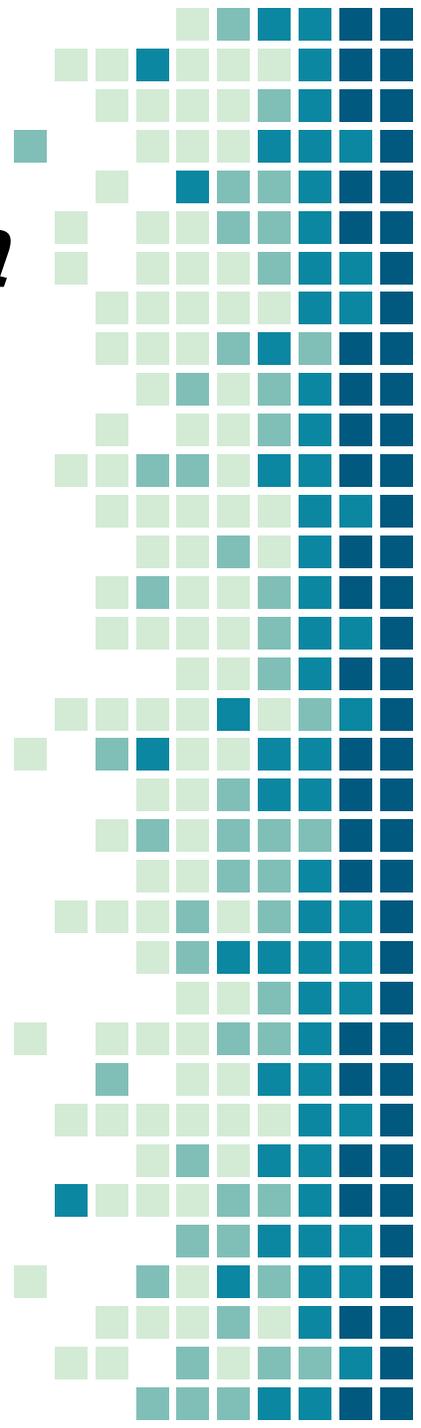
Policy Problem: Value Chain Disruption

**Data
Flows**

Structure of Control

**Use
Cases**

Utility \Rightarrow Value



Unpacking the Policy Problem

Legal: Who owns?

Economic: Ag-data Markets

Behavioural: Efficient?

Primary Research Question

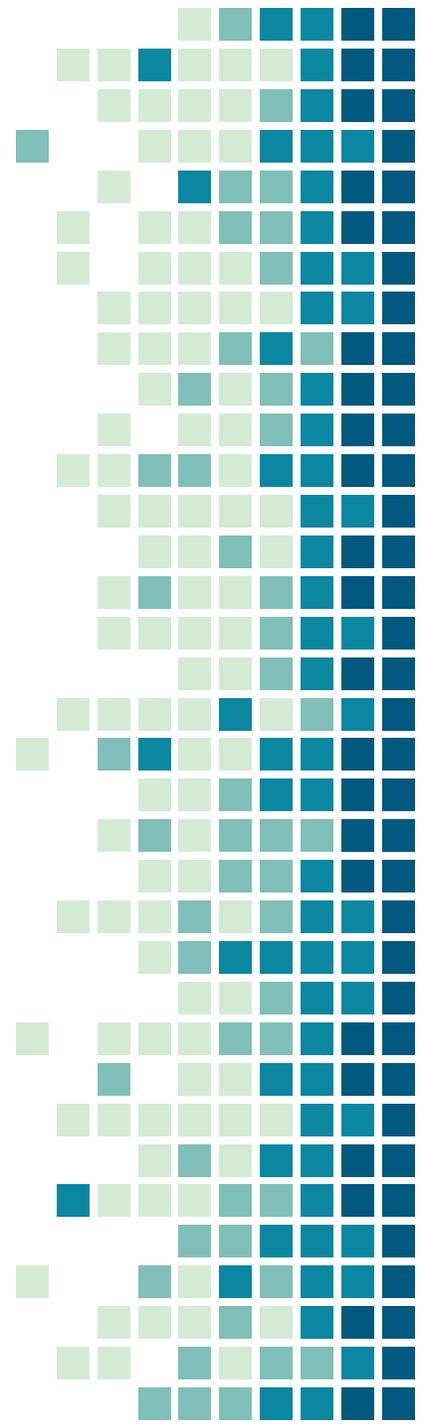
What are the dynamics that underlie ag-data exchange between the key stakeholders in agri-foods?

“This paper applies a behavioral approach to one piece of a larger policy puzzle, considering the question of whether initial assignment of ownership affects outcomes in an environment wherein ag-data is transacted—or, as characterized in the seminal work of Kahneman and Tversky, ‘Does starting point matter?’”

“Thaler (1980) called this pattern—the fact that people often demand much more to give up an object than they would be willing to pay to acquire it—the endowment effect.”
(Kahneman, Knetsch & Thaler 1991)

Loss-aversion

“In more formal terms, this paper conveys an analysis that tests for the presence of the ***endowment effect***, which occurs when the condition of ownership, itself, leads the owner to irrationally overvalue an asset or possession. Inversely, the *endowment effect* could be construed in terms of the condition of non-ownership causing one to undervalue an asset or item when faced with purchasing choices.”

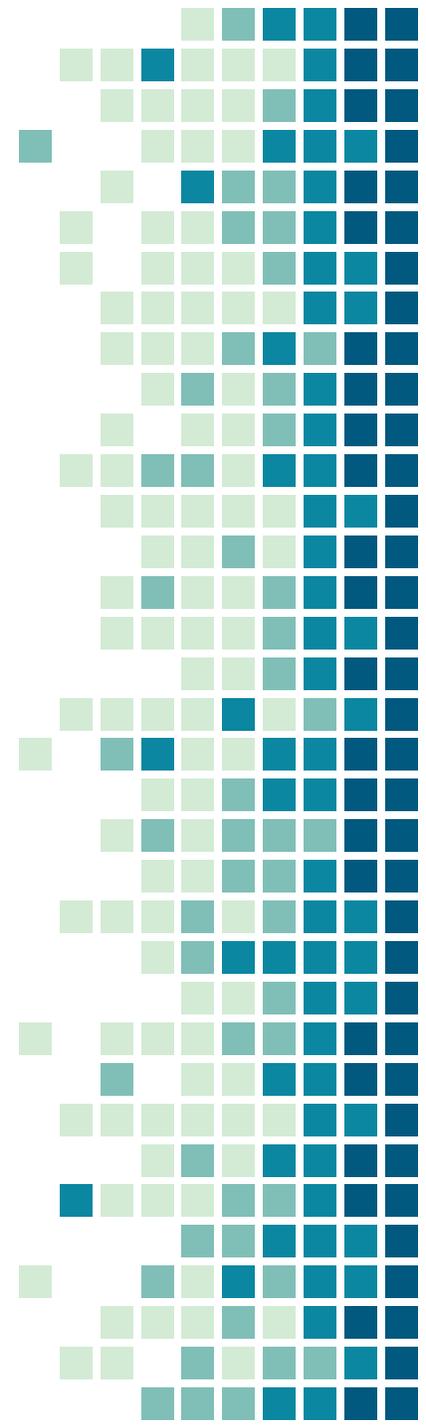


Secondary Analysis: Three Worldviews (Gilpin)

	Realism Nationalism / 'Mercantilism'	Liberalism Neoliberalism / Liberal internationalism / 'State-at-Bay'	Critical Theory Marxism / Constructionism / Post- structuralism / Intersectional Feminism / Postmodernism / 'Dependencia'
Primary Unit of Analysis	<ul style="list-style-type: none"> state is principal actor 	<ul style="list-style-type: none"> individual is principal actor 	<ul style="list-style-type: none"> groups are principal actors (i.e. class, gender, race, sexuality, indigeneity, etc.)
Source and use of power	<ul style="list-style-type: none"> global affairs determined by dynamics of states vying to increase power and security (Morgenthau) 	<ul style="list-style-type: none"> economic global interconnection has undermined predominance of state power competitive enterprise efficiently distributes economic power 	<ul style="list-style-type: none"> focusses on relational power between groups power derived through controlling means of production (Marx) power drawn from hegemonic narratives (Gramsci)
Nature of relations between principal actors	<ul style="list-style-type: none"> zero-sum focuses on relative gains in state power 	<ul style="list-style-type: none"> positive-sum focusses on absolute gains of individuals 	<ul style="list-style-type: none"> zero- or negative-sum inherently conflictual due to formal and informal institutional structures (Marx)
Role of state	<ul style="list-style-type: none"> allow individual to escape state of nature (Hobbes) smooth out peaks and troughs of economy through fiscal policy and regulation (Keynes) secure regional trade arrangements that benefit national interest develop military to increase state power advance foreign policy interests abroad and extend international influence 	<ul style="list-style-type: none"> provide minimal conditions necessary for market (Hayek) ensure stability; enforce contracts and protect property rights prevent market failure (e.g. monopoly, missing and incomplete markets, negative externalities) facilitate liberalization of and participation in global markets 	<ul style="list-style-type: none"> much of existing political and social institutions must be reformed or dismantled state acts as primary vehicle of wealth redistribution social democrats: provide social programs (e.g. welfare, pensions, universal healthcare) Marxists: enforce equity, centrally plan economy

Method

- Surveyed 137 undergrad students from College of Agriculture (U of S)
 - Surveyed digitally, simultaneously in classroom
- All exposed to neutral briefing on ag-data, potential opportunities and risks
- Divided into 2 treatment groups (T1 & T2)
- Between-group treatment applied across 2 groups
 - 65 respondents in T1
 - 72 respondents in T2
- Next came questions about respondents' attitudes toward technology
- Finally, participants were surveyed on their worldviews (WV)
 - 8 questions with one answer for each WV
 - 'Don't know' option
 - 1 question — choose three of many options, some corresponding to WV, others neutral
 - Respondents received **'final score'** for each WV



Results (primary)

Treatment #1: $p = 65$, $\mu = \$11.2$

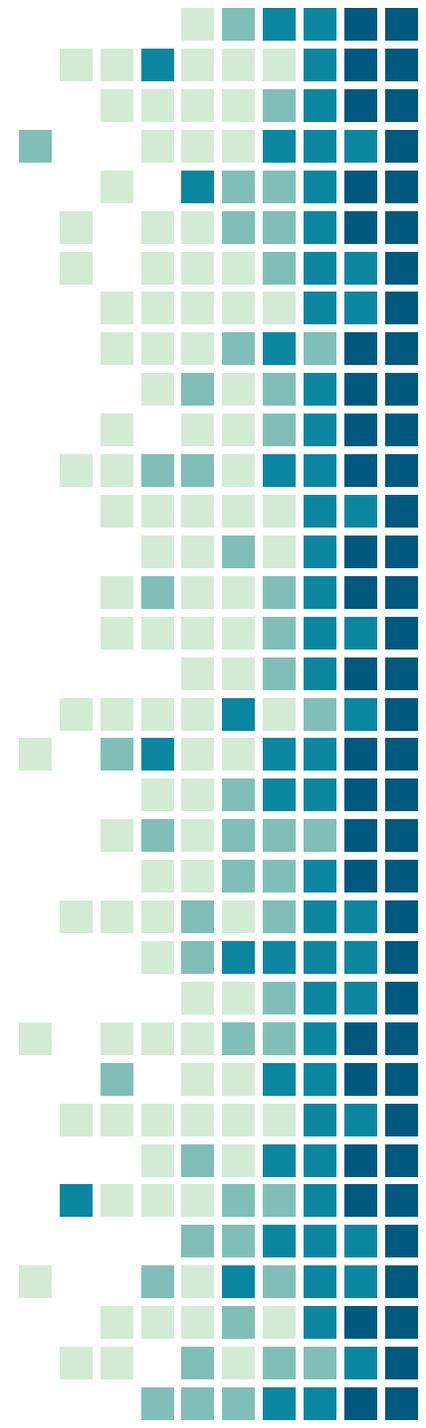
Treatment #2: $p = 72$, $\mu = \$7.2$

Distributions = non-parametric

- *Unpaired Two-Samples Wilcoxon Test in R*

p-value = $1.549e-06$

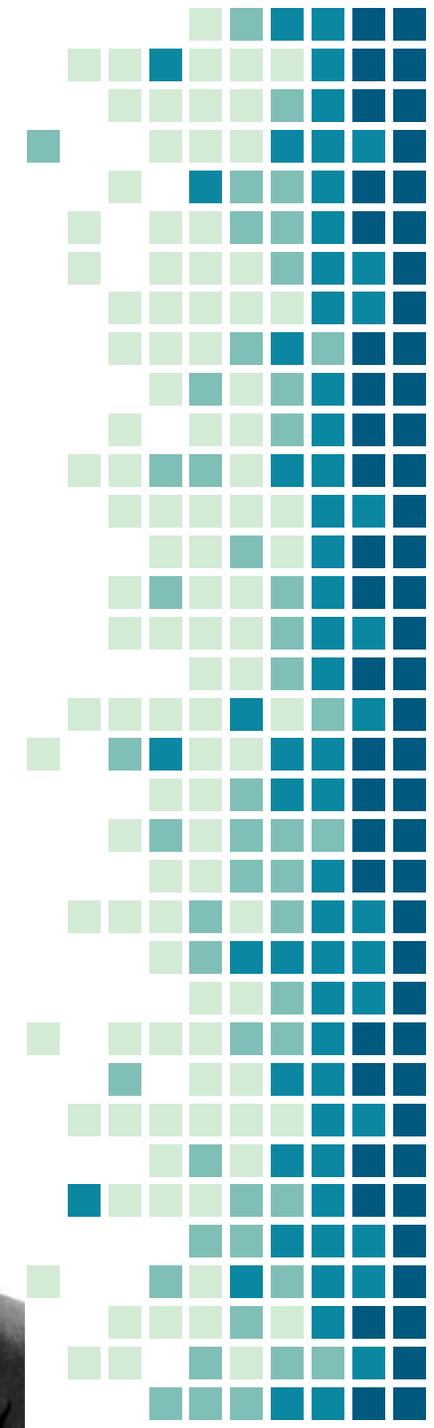
65.7% endowment effect



Results (secondary)

Worldview Variables	μ	Max
Declinism	1.21	3
Regulation	2.74	5
Historical Pessimism	1.91	5
Future Pessimism	2.23	5
ViewChange	-0.32	n/a
Economic Pessimism	2.09	5
Societal Pessimism	2.63	5
Existential Pessimism	2.20	5
Overall Pessimism	2.23	5

Worldview Variables	μ	Max
Realist	3.34	11
Liberal	3.14	11
Critical	1.88	11





Policy Implications

**Does Endowment Effect Impede
Coasian bargaining?**



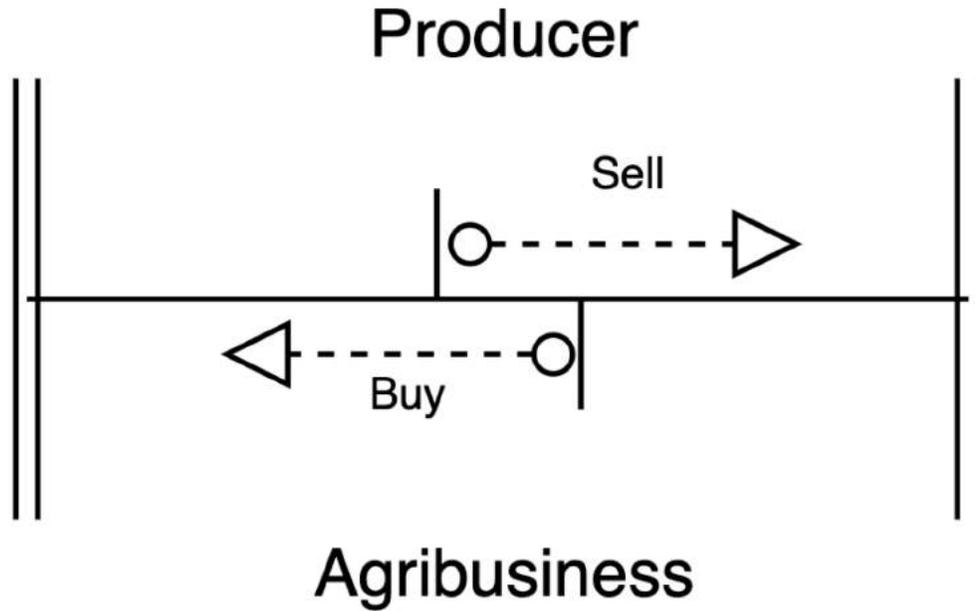


Ag-Data Use Cases

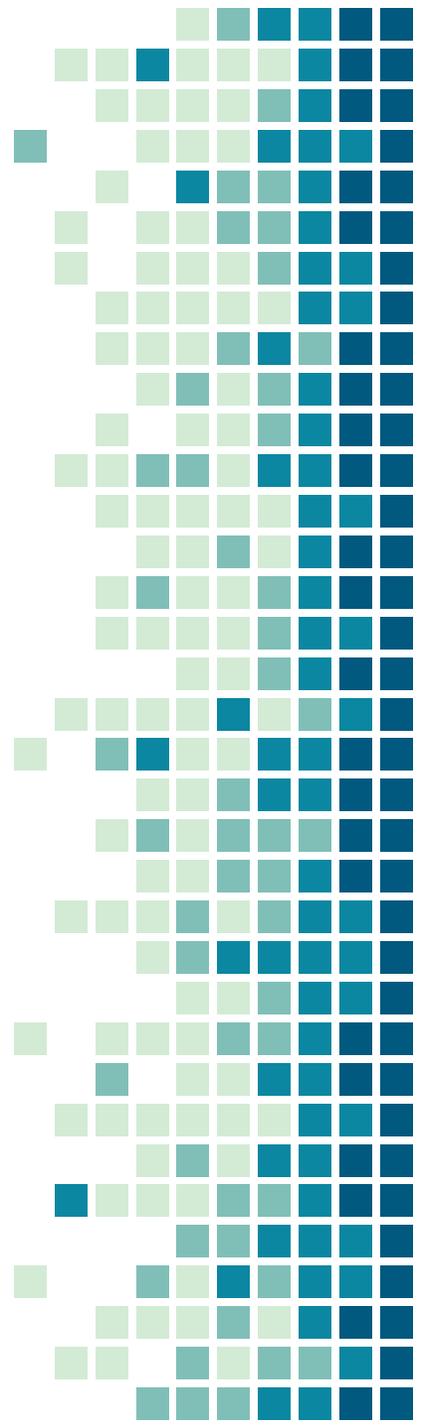
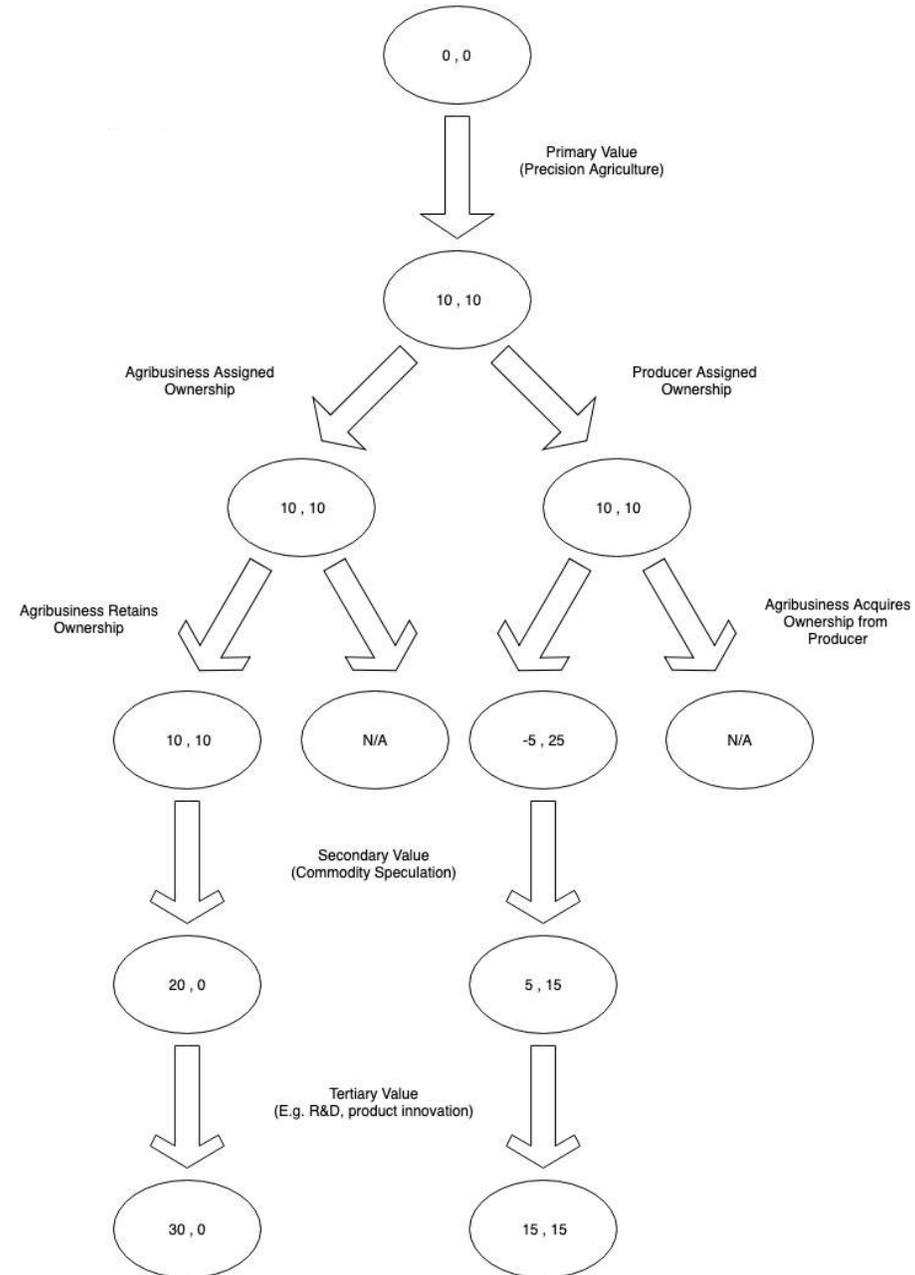
- ① Primary: On-farm – precision agriculture – positive-sum
 - Payoff: +10 marginal value for producer; +10 for agribusiness
- ② Secondary: Off-farm (e.g. commodity speculation) – zero-sum
 - Payoff: -10 marginal value for producer; +10 for agribusiness
- ③ Tertiary: Off-farm (e.g. product innovation) – positive-sum
 - Payoff: +10 for agribusiness; no change for producer

Assumptions:

1. Agribusiness Val > Producer Val
2. No Endowment Effect

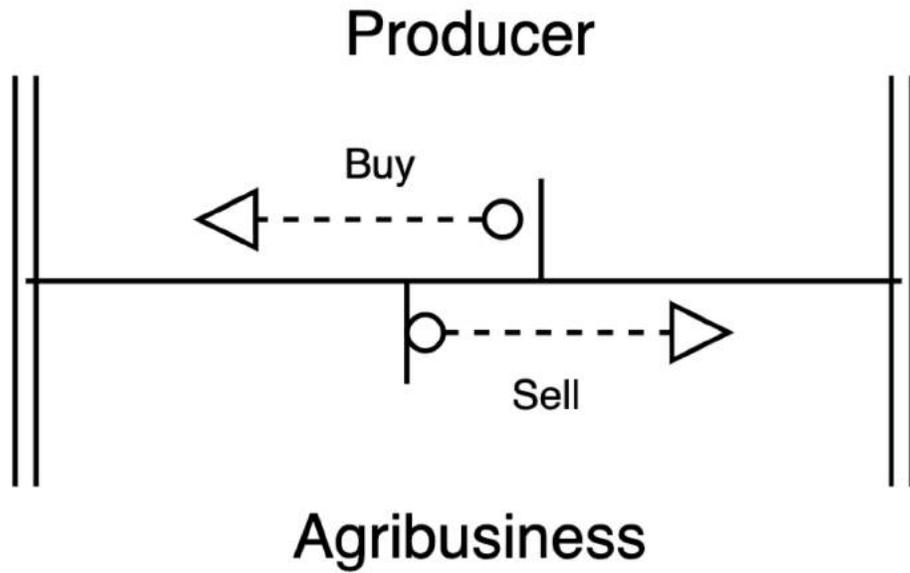


	Initial Ownership:	
	Agribusiness	Producer
Payoff	(30 , 0)	(15 , 15)

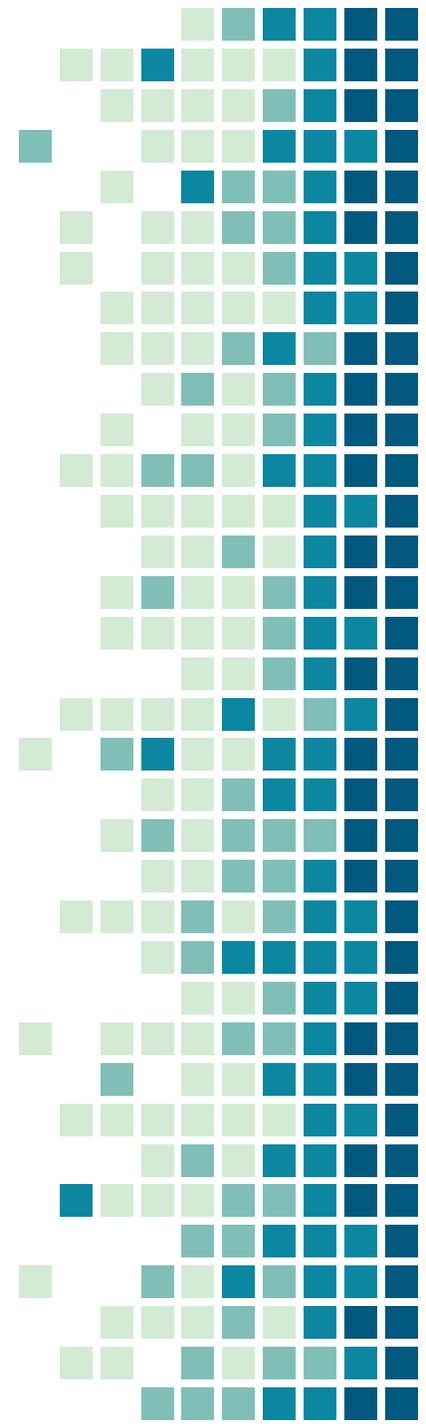
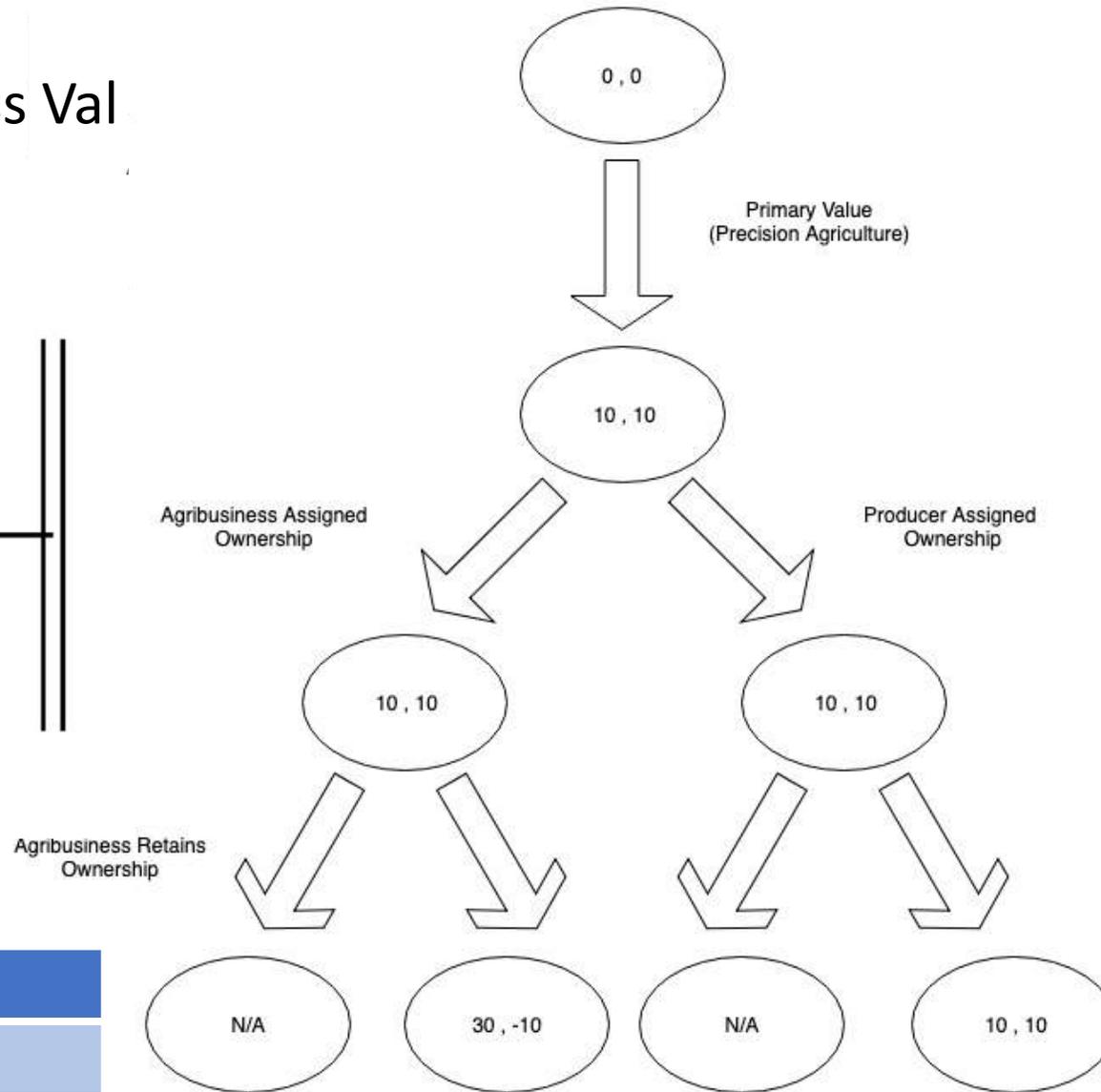


Assumptions:

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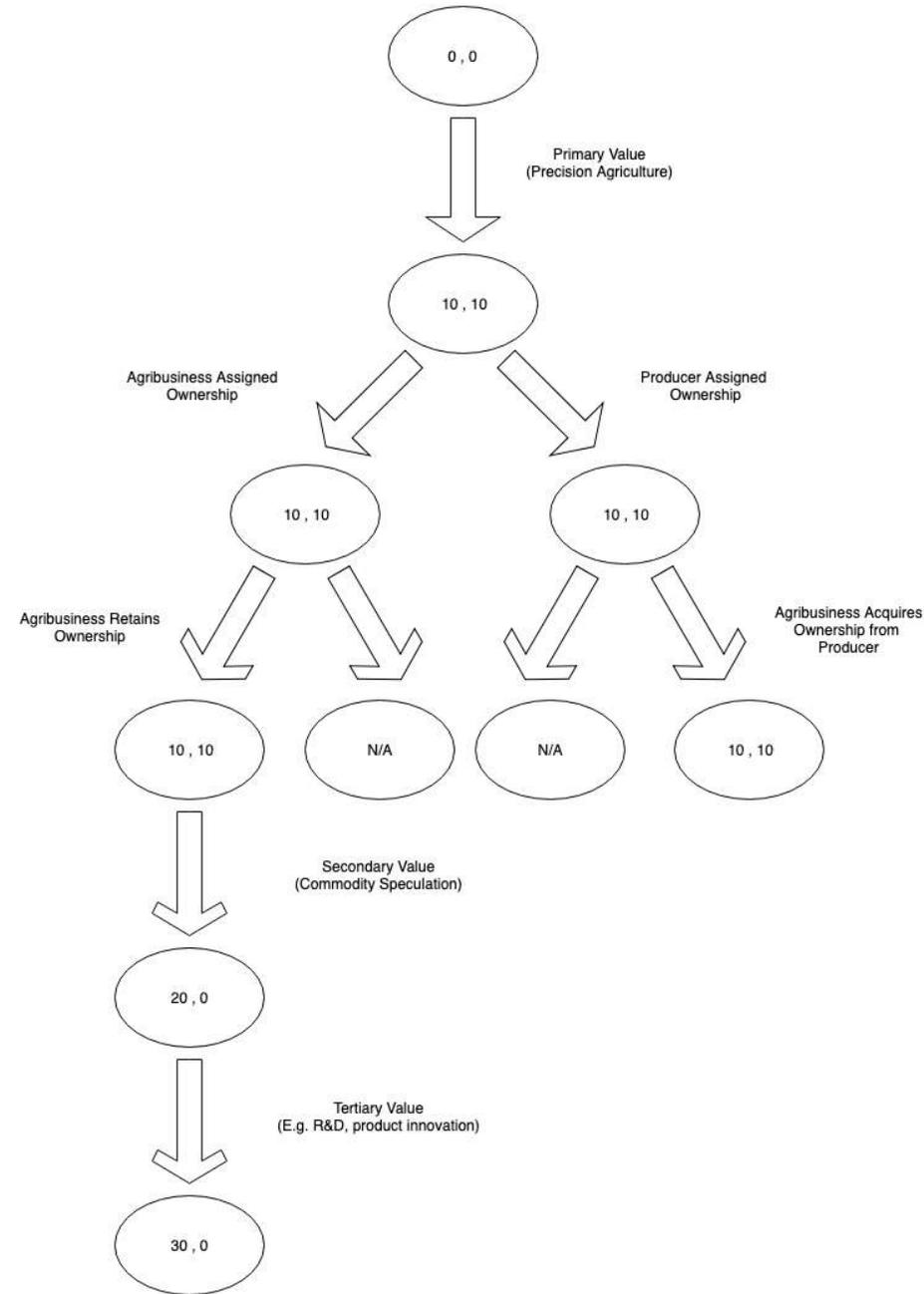
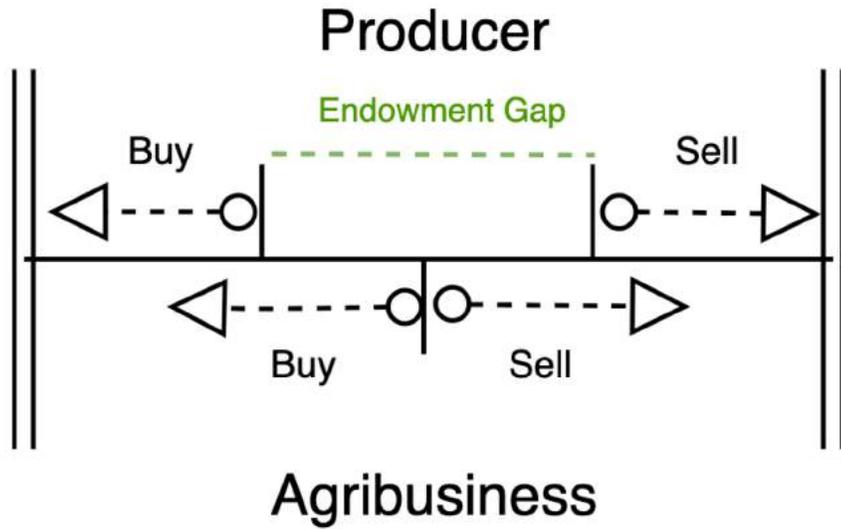


	Initial Ownership:	
	Agribusiness	Producer
Payoff	(30 , -10)	(10 , 10)

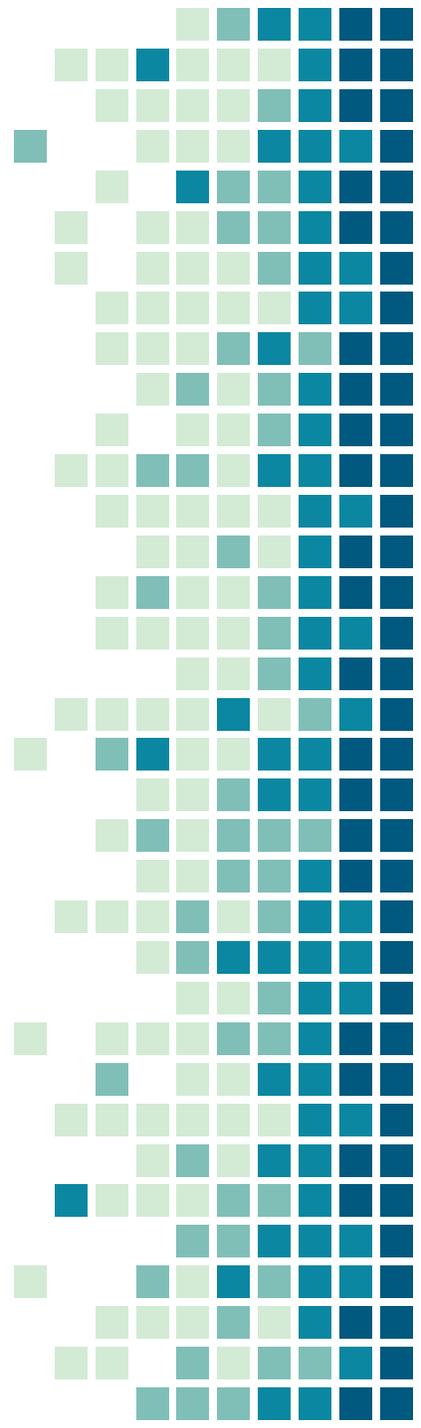


Assumptions:

1. Endowment Effect



	Initial Ownership:	
	Agribusiness	Producer
Payoff	(30, 0)	(10, 10)



A close-up photograph of a green leaf, showing a detailed network of veins. The veins are light green and form a complex, branching pattern against a darker green background. The leaf is oriented horizontally, with the main vein running from left to right. The overall appearance is fresh and natural.

THANK YOU