

Smart markets for transferable pumping rights

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Key messages

1. 'Markets' include many different transaction types with varying incentives and potential outcomes
2. It is possible, and may be desirable, to separate financial and regulatory sides of markets
3. Price anonymity and neutrality have value for participants; most market structures offer neither, but smart markets can provide both

Background



- Trade-off between resource conservation and producer benefits
- Markets can be a cost-effective tool in regulated systems
- Markets can provide incentives for innovation

Groundwater transfers 101

Need to account for complex hydrology as well as environmental and social objectives

- Is there a cap on pumping, wells, or irrigated land?
- What are the characteristics of contracts?
Timing, duration, accounting units, banking & carryover provisions
- Are there other concerns?
Critical area zoning, stream depletion, flow zones, lagged effects

⇒ in general, there is not one price for groundwater transfers

State of agricultural groundwater trading

- **US states**

Nebraska, Kansas, Texas, Arizona, Nevada, California, Washington, . . .

- **Other countries**

Australia, New Zealand, China, India, Pakistan, Oman, Chile, . . .

Groundwater markets

Price discovery, information, and regulatory context vary widely:

- Bilateral contracts (coffee shop markets, brokerage)
- Monopoly/monopsony (water banks, auctions)
- Bulletin boards (most water exchanges)
- Algorithmic clearing (smart markets)
Importantly, online \neq smart

My opinion: Many water transactions have underappreciated issues with perceived fairness related to their structure

Groundwater trading lessons learned

- For water managers, verifiability & permitting ease are key
- For farmers, fairness & confidentiality are key
- Value proposition provided by automated matching and permitting
- Messaging matters
- You may not need perfect monitoring; it depends on management goals

Confidentiality, Trust, and Pricing

- Trading involves both **regulatory** and **financial** elements
- Trading involves the transfer of financial information between buyer, seller, and possibly intermediaries
- Distrust can occur if
 - The regulator is a market participant
 - Market structure appears to favor one side
 - Sensitive financial information is reported to the regulator or public domain

Increasing participant trust in markets

1. Use outreach and education to help producers understand how water values vary over space and time
2. Separate financial and regulatory components of trading
3. Build neutral platforms (e.g. anonymous, confidential bidding with algorithmic clearing)

My opinion: The objective is to encourage transactions that move the system towards desired outcomes. Price discovery is a milestone, and not an outcome.

Summary

1. 'Markets' include many different transaction types with varying incentives and potential outcomes
2. It is possible, and may be desirable, to separate financial and regulatory sides of markets
3. Price anonymity and neutrality have value for participants; most market structures offer neither, but smart markets can provide both

Thank you!

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