Balancing Market Power in Agricultural Contracts

Consequences for Social Efficiency, Cooperation, and Distribution

Paula Cordero Salas

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THE OHIO STATE UNIVERSITY

Empirical Motivation

Worldwide trend of consolidation in the Agricultural and food sector: few processors vs. many growers

Agricultural contracts are often incomplete

Concerns about Fairness in contracts
o Political pressure: regulate contracts and balance market power, e.g. encourage collective bargaining

Critical for Development

Theoretical Motivation

Bargaining Groups(BG): labor & agricultural sector

 Results: Model as a bilateral monopoly, Helmberger & Hoos (1965)

Contract theory: Levin (2003), MacLeod (2006;2007), MacLeod & Malcomson (1989;1998), Wu & Roe (2007)

 Results on the role of self-enforcing contracts:

o Restrict compensation and affect incentive provision

o Efficiency and distribution problems can be separated: re-distribution of surplus without changing incentives for efficiency (satisfying IRCs)

Question

What are the consequences for efficiency, cooperation, and distribution of surplus when including a BG in a market characterized by a high level of monopsony power, incomplete contracts and repeat trading?

What do I do?/ Contribution

Theoretical model combining the Nash Bargaining model and the relational contracts model by relaxing some assumptions

- New application to refine understanding of bargaining power under relational contract

Main Predictions

1. Contracts Completely **Enforceable**:
   - ✓ Full efficiency is reached
   - ✓ Trade Partners cooperate through enforcement of contracts
   - ✓ Any Distribution can be achievable

2. Contracts Completely **Unenforceable**:
   - ✓ If the bargaining power of the BG too high, the buyer has more incentives for opportunistic behavior: renege contract terms
   - ✓ Cooperation is not sustained over time
   - ✓ Efficiency is damaged by the lack of cooperation
   - ✓ Problems of efficiency and distribution can not longer be separated

3. Insights for Public Policy

Sketch of the Model

Principal-Agent model in an infinitely repeated game:

- ➢ sellers >buyers and both are risk neutral

Contract: $(P, Q), \ q \in [\underline{q}, \overline{q}]$ *May not be third-party verifiable*

Payoffs: if seller accepts $\Pi = R(q) - P \ \& \ U = P - c(q)$

       if seller rejects $\overline{\Pi} \ \& \ \overline{u}$

Net surplus : $S(q) - \overline{s} = R(q) - c(q) - \overline{u} - \overline{\Pi}$

Social efficiency: $q = \overline{q}$ since $R'(q) > c'(q) \ \forall \ q \in [\underline{q}, \overline{q}]$

Two levels of contract enforcement:

1. If q is verifiable (CE): $Q = q \ \& \ P = p$

2. If q is not verifiable(IE): $P = P(q) = p + D(q)$

                     $Q \neq q \ \& \ P(q) \neq P$

Key difference: p is not enforceable either (Wu and Roe, 2007)

Sketch of the Model

Other Assumptions: -Parties know past actions of partners;

-Care about discounted future payoffs, $\delta\epsilon(0,1]$;

-SPNE is sustained by trigger strategy

Key difference: add a Bargaining Group (BG)

- Derive the Nash Bargaining Rent Condition (NBRC)

$$p + b(q) - c(q) \geq \bar{u} + \beta(S(q) - \bar{s})$$

  ➢ **β is the bargaining power of BG and it is exogenous**

  ➢ **IRC$_S$ does not bind**

- Solve using NBRC and satisfying IRC$_B$ when CE and include DICCs when IE
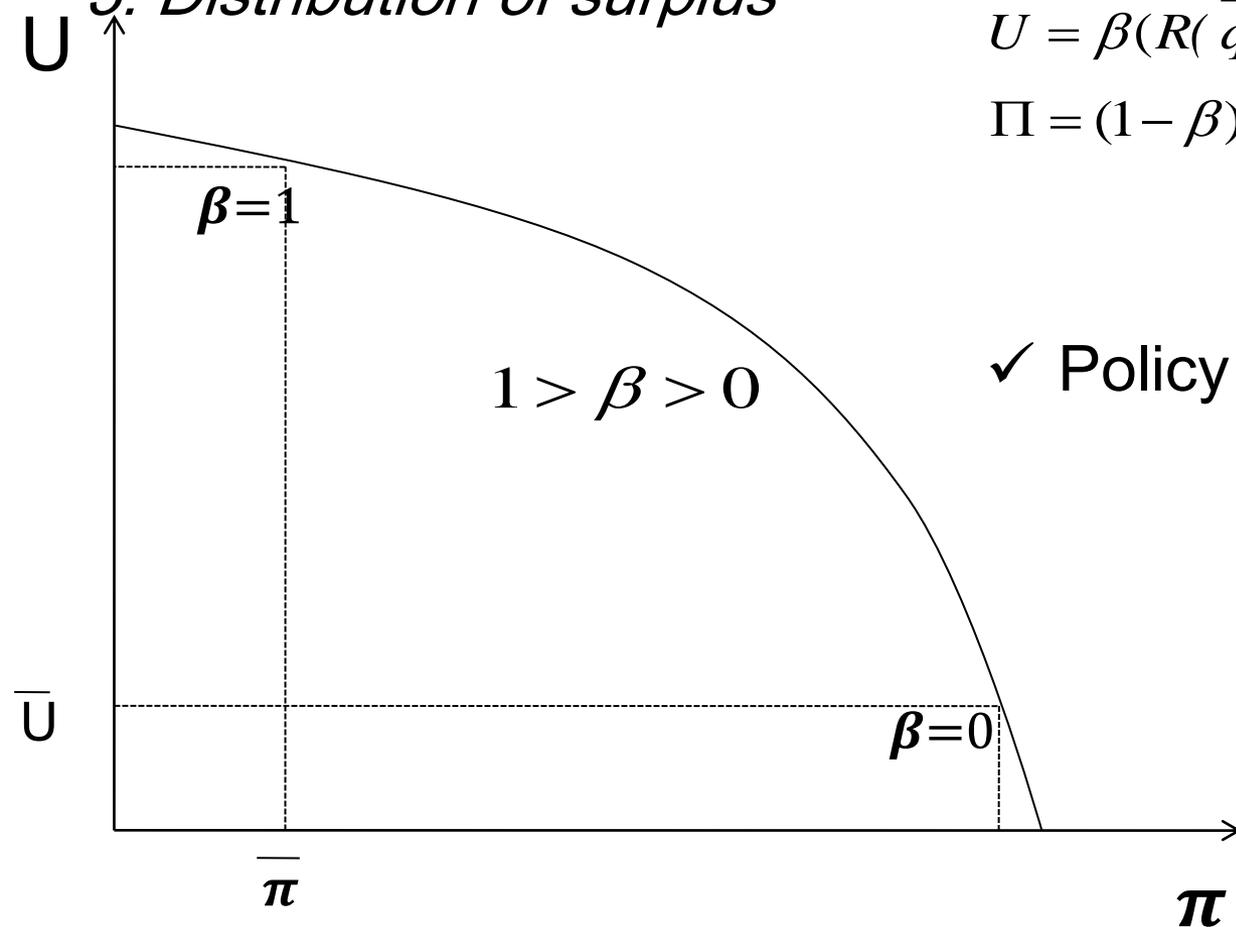
Predictions and Policy implications: *CE case*

1. Contracts are enforced

2. Full efficiency is achieved

3. Distribution of surplus

$$Q = q \, \& \, P(q) = P$$

$$q = \bar{q}$$

$$U = \beta(R(\bar{q})\text{-}c(\bar{q})\text{-}\overline{\Pi}) + (1-\beta)\bar{u}$$

$$\Pi = (1-\beta)(R(\bar{q})\text{-}c(\bar{q})\text{-}\bar{u}) + \beta\overline{\Pi}$$

✓ Policy supporting BG will be
Effective

Predictions: *IE case*

A Contract can implement $Q = \bar{q}$ if satisfies all constraints, δ is high and $P(q)$ is characterized by:

$$b(q) - d(q) = c(Q) - c(\underline{q}) - \frac{\delta}{1-\delta}\beta(S(q) - \bar{s})$$

$$P(q) = p + b(q) = c(q) + \bar{u} + \beta(S(q) - \bar{s})$$

Efficiency

- Size of discretionary payment declines
- Seller needs less incentive to supply high quality
- Seller does not deviate: residual claimant of surplus (BG)

Distribution of surplus: If trade happens, seller gets a higher payoff

Predictions: *IE Case*

BUT Self-enforcing agreements are not sustainable

$$if \ \beta > \hat{\beta} = \frac{\delta R(q) - \delta \overline{\Pi} - c(q) - \overline{u}}{S(q) - \overline{s}}$$ *needs δ close to 1!!!!*

$\delta \geq 1$ when $\beta = 1$

Cooperation is not sustained over time

- Buyers have a higher incentive for opportunistic behavior
- Efficiency is undermined by the lack of cooperation and the presence of shorter relationships.
- Problems of efficiency and distribution can no longer be separated

Policy implications

… are more ambiguous!!!

Policies to support a BG: negative consequences on efficiency if the market power that the group reaches is too high by breaking down of trading relationships.

Regulate contracts---- P (fixed payment) ---ENFORCEABLE

CONTRAST--theory of 'strategic ambiguity' of Bernheim and Whinston (1998)

BUT…..need very high discount factors: may cause inefficiencies by crowding out private incentives.

Conclusions/Future Directions

Potential trade-off : optimal economic outcomes and distribution of surplus

Derive hypothesis and conduct some empirical analysis using experimental economics

Apply this kind of model regarding the effectiveness of the policies under more open economies:

- – institutions like BGs become weaker and contracts more incomplete.