The Concept of Risk in Agricultural Cooperatives

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Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse

Motivation

- **Coop assumed to address risk issues but little attention expressly given to this motivation.**
  - **"Risk is a pervasive problem for farmers, and methods to reduce it or mitigate its effects naturally hold interest. Cooperation has not been analyzed rigorously in this context, but assurance of markets and stable prices are often listed among the benefits of cooperation"** (Sexton, 1986, p. 1170).

Objective

- **Elaborate on coop role managing risk/uncertainty.**
  - Balancing supply & demand
  - Assist with access to & use of risk mgmt tools (insurance, hedging, forward contracts)
  - Mitigate risk of opportunism under conditions of small numbers bargaining, asset specificity, etc.

- **Empirical evidence on theoretical propositions.**
  - Contracting costs lead to (quasi-)vertical integration

GICL Workshop: "Balancing Market Demand & Producer Supply" (October 21-23, 2019)

- **Attendees:** Representatives of Florida Natural, Ocean Spray, Dairy Farmers of America, Organic Valley, CoBank, and academics
- **Ideas:**
  - Multi-year delivery agreements with members (penalties for non-delivery),
  - Non-member business – fill excess capacity,
  - ***Take all members produce*** but pooling-pricing agreement for quality control,
  - Value-added/Commodity Pools (Base/Excess Plans).

Coops as Real Options

- ***Take all members produce!*** This is effectively a real **put option**, as noted by Mike Sykuta (2019). Shaffer (1987) called this a *"contingency agreement."*

- **Brad Plunkett (2005): "**A defensive cooperative investment could be thought of as a **call option** in that the value of a successful initial cooperative investment could underpin a much larger payoff from subsequent investment at the farm level. This is because the farmer may avoid expected loss to his traditional discounted cash flow that could arise by a ***supplier or procurer's future strategic choices***."

Coops as Mechanism for Relational Contingency Contracting to Manage Risk

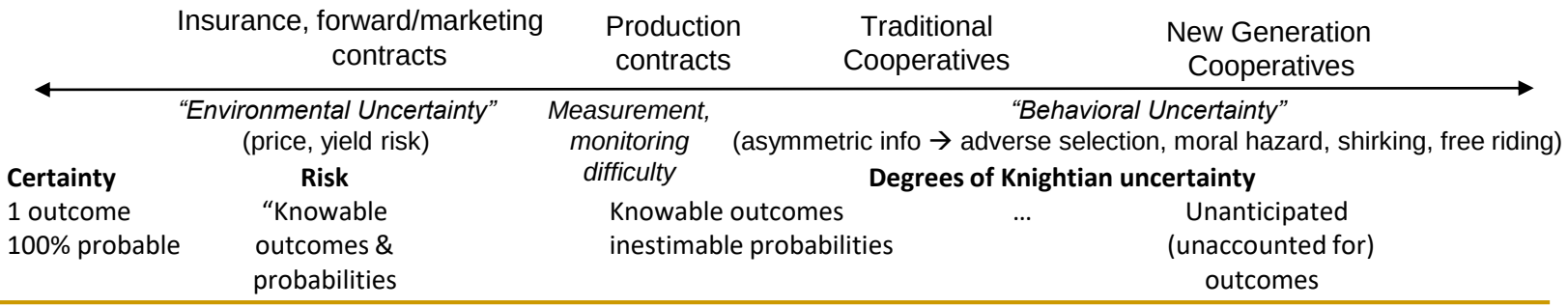
- **Staatz (1987):** "Because farmer cooperative firms combine elements of both vertical integration and ***contingency contracting***, they may offer more ways of dealing with **uncertainty** than either IOFs or bargaining associations."
- **Shaffer (1987):** A cooperative capable of attracting members who produce a large part of the total production of a commodity could facilitate **matching supply with demand** through binding contracts with members and forward delivery contracts with buyers. Such contracts would necessarily involve ***contingencies*** that might be difficult to specify in detail. Here a question is whether the cooperative could provide effective ***relational contracting***. Such contracting would depend on developing **trust** among members and buyers."
- **Ollila (1994):** "Cooperatives have special properties for coping with **uncertainty** by transforming it into a **shared risk** through the cooperative feature of ***relational contrac****t* (with its members). The same feature also lowers the cost of transacting in high frequency transactions requiring long-term commitment in an uncertain environment. **Cooperatives also are efficient in preventing the transformation of large number exchange into bilateral exchange in high frequency exchange situations.**"

A basic theoretical proposition … (TCE, +Agency, & Property Rights Theories)

- **"Risks of *opportunism* may be lower for transactions with cooperatives than with IOFs."**
  - Producer ownership reduces concerns of **incomplete contracting** (Sykuta & Cook 2001).
  - Less incentive to withhold info, and hence, fewer **principal-agent** problems of moral hazard & adverse selection from asymmetric info (Cook & Barry, 2004).
  - Producer-laden board of directors monitors agents, i.e., management (Fama & Jensen, 1983).
  - Coops as ***relational contract*** transforming **uncertainty** into **risk** (Ollila, 1994).

A Spectrum/Continuum of Unknowns

- Distinction of ***risk*** vs. ***uncertainty*** (Knight 1921) & types of uncertainty in organizational economics (Mahoney 1992).
- Insurance & futures markets manage ***risk***, forward/marketing contracts for ***market/environmental uncertainty***, & production contracts address ***measurement/monitoring*** *uncertainty*.
- Costs of incomplete contracting (due to ***behavioral uncertainty***) lead to (quasi-) vertical integration (e.g., cooperatives).
- NGC is response to 5 vaguely defined property rights (Cook 1995).



Prior slide looks a bit like uncertainty axis in TCE *discriminating alignment*

- TCE prescribes use of least cost form of transactional governance based on concerns related to the levels of uncertainty & asset specificity present, as associated costs are not easily measured (Williamson, 1975).

H_0: *Contracting costs lead to (quasi-)vertical integration.*

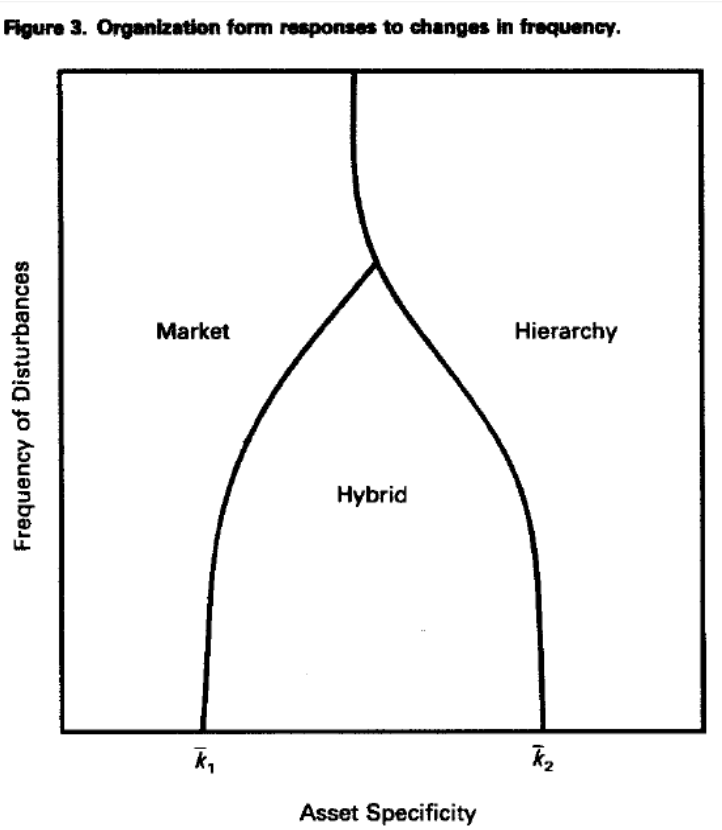
Asset Specificity	Low	Medium	High
High	Contract	Contract or vertical integration	Vertical integration
Medium	Contract	Contract or vertical integration	Contract or vertical integration
Low	Market transaction	Market transaction	Market transaction

Uncertainty

Source: Brickley, J. A., Smith, C. W., and Zimmerman, J. L. 2009. *Managerial Economics and Organizational Architecture* (5th Edition). New York: McGraw-Hill Irwin, p. 616.

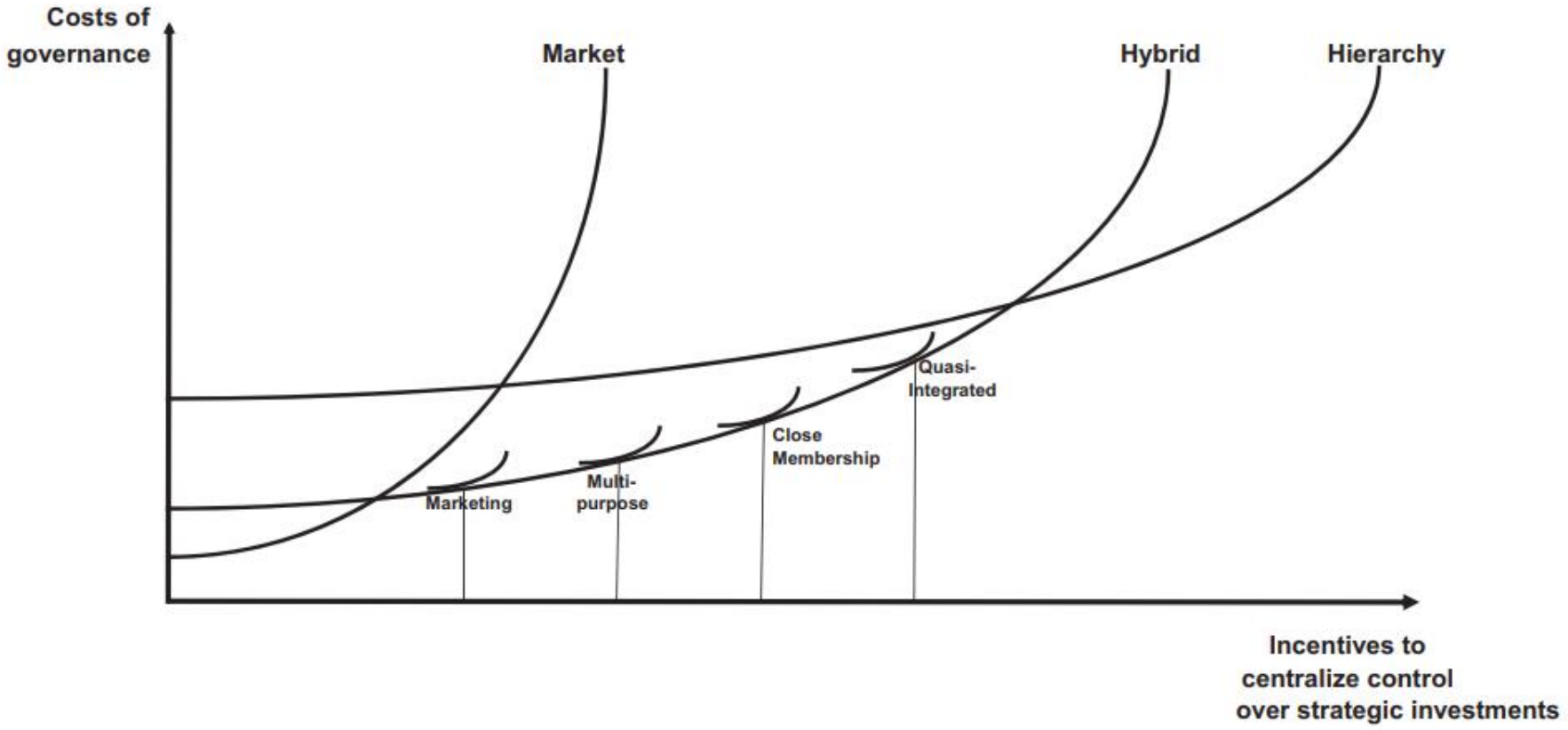
Williamson (1991) on Hybrids

- Williamson's figure predicts hybrid (e.g., coop) under medium levels of uncertainty & asset specificity combinations (U×A).



Williamson (1991), Comparative Economic Organization, The Analysis of Discrete Structural Alternatives

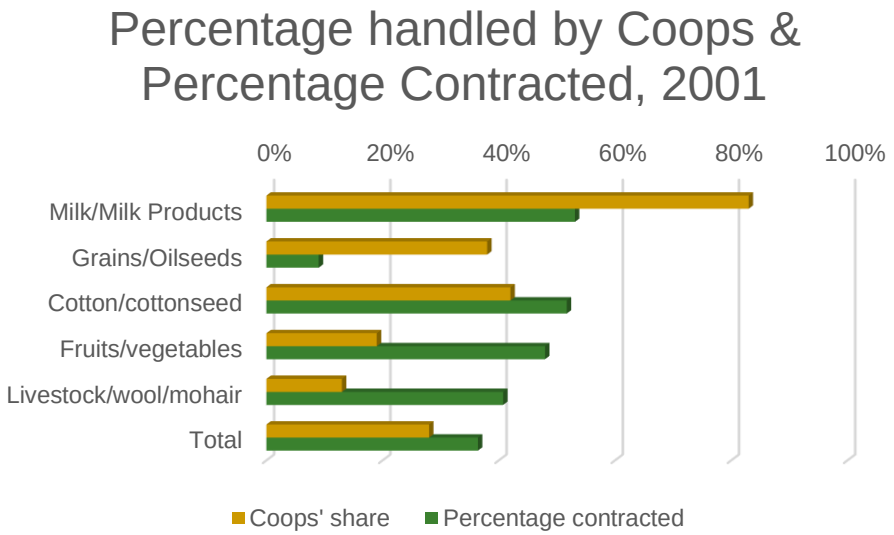
Ménard's (2018) Model

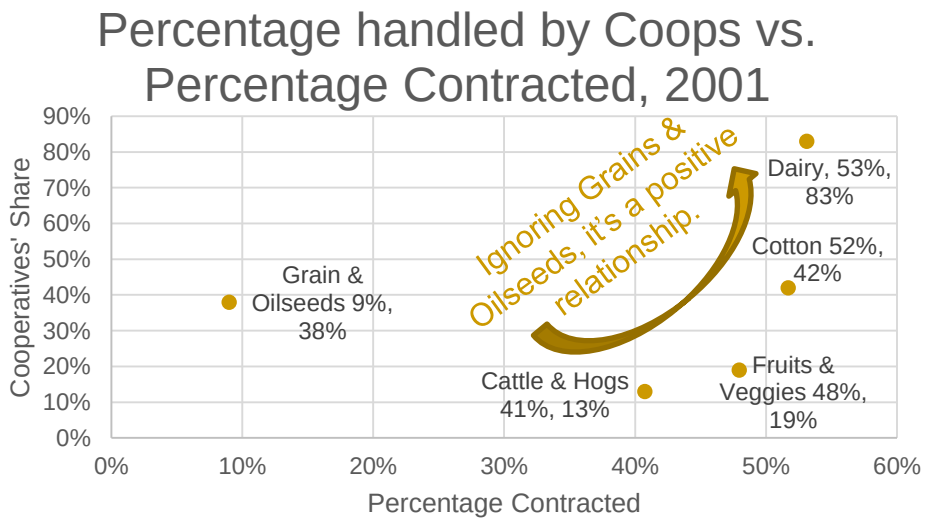


Ménard, C. "Organization and governance in the agrifood sector: How can we capture their variety?" *Agribusiness*. 34:142–160.

Contracting costs lead to (quasi-)VI (*costs of incomplete contracting*)

- Data is fairly supportive!

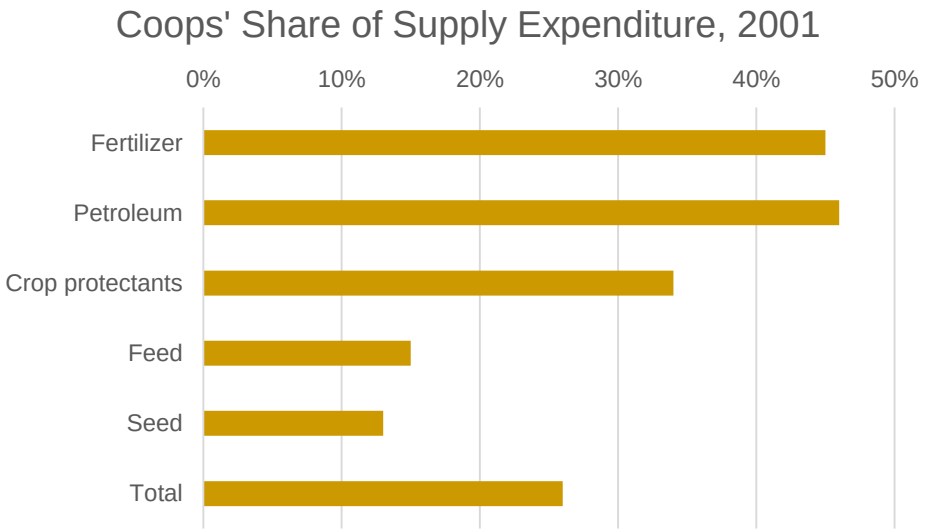




Sources: USDA ERS for contract data & USDA Rural Development for coop data.

Grain & oilseed producers market through coops to ensure input provision!

High use of coops for grain/oilseeds reflects reliance on coops for inputs (see graph here), and hence, patronage on the marketing side to ensure continued existence. Note grain/oilseeds have lowest asset specificity of listed commodities. Grain/oilseeds may have artificially high uncertainty due to $6.00/bu corn from 2012 drought on top of ethanol demand.



Sources: USDA Rural Development for coop data.

Conclusions

- Coop's underappreciated role in risk management:
  - Balancing supply & demand
  - Assist with access to & use of risk mgmt. tools (insurance, hedging, contracts)
  - Lower risk of opportunism when contracting with coop.
- Policy: substitutability or complementarities
  - Unanticipated effects of policy promoting risk mgmt. tools.
- Future work:
  - Gather data to test above policy issues and Williamson and Menard's models of hybrids.

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Questions?