

Relational Contracts: The Role of Discretion in Incentives and Control Within Firms and Between

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I. Relational Contracts

- *Equilibria* of repeated games (with transfers)
- *Shared understandings* of the parties' roles in and rewards from collaboration (so rooted in the details of the parties' relationship that they cannot be shared with a court, and hence are enforced by the shadow of the future)
- Part of the *culture* of a relationship?
How we do things around here.
- Part of the *norms* of a relationship??
How we *should* do things around here.

- Widespread and long-recognized (outside economics)

- Firms are riddled with relational contracts:
 - Barnard 38, Simon 47, Selznick 49, Gouldner 54, Blau 55
 - Lawler 71, Eccles 85, Dalton 59, Bower 70
- So are business dealings:
 - Macaulay 63, Macneil 78, Dore 83
 - Powell 90, Podolny-Page 98, Gerlach 91, Gulati-Singh 98, Kogut 89, Dyer 96

BGM Q/E. 2002

- Economically important (and increasingly studied by economists, including empirically)

- Field evidence (largely between firms):
 - Rotemberg & Saloner 86, McMillan & Woodruff 99, Robinson & Stuart 07, Guriev et. al. 11, Macchiavello & Morjaria WP
- Lab evidence:
 - Engle-Warnick & Slonim 04, Dal Bo 05, Brown & Zehnder 07, Duffy & Ochs 09, Brown & Serra-Garcia WP

GH Org. Sci. 2012

“No contract in the world will
compel an unwilling partner to
perform.”

M. Levine, NBER conference, 2002

CEO, New York Air (1982-84)

Dean, Yale School of Management (1988-92)

EVP, Northwest Airlines (1992-99)

Harvard Law School (1999-2002)

II. Discretion

- Boss—subordinate
- Peer—peer
- HQ—department
- Department—department
- *Organization—organization*

- Vertical or horizontal
- People, groups, firms, ...

Bosses have discretion.

So do peers.

Example 1: Bonus @ Lincoln Electric

(Fast & Berg '75)

- Arc welders and supplies in Cleveland (*Fortune* 200)
- Pay = piece rate + *bonus*
 - supervisor assesses ideas, cooperation, dependability
 - bonus *about* half of typical worker's pay
 - bonus pool *about* half of pre-tax, pre-bonus earnings
- Complementary relational contracts
 - Change piece rate; employment security
- (Re)defining relational contract, even after decades

Example 2: Decentralization @ J&J

(Aguilar & Bhambri '83)

- “Decentralization = Creativity = Productivity”
 - **J&J:** 140 (220) local operating companies
 - Exec. Com. = 11 (but Tylenol w/ codeine)
 - π -center, autonomy, retained earnings

- Hospital Services Group “3 years late”
 - Revising promises w/ LOCs?
 - New promises @ HSG?
 - Service group? Cost center? Staffing?

Example 3: Kenyan Flowers

The Value of Relationships: Evidence from a Supply
Shock to Kenyan Flower Exports

Rocco Macchiavello Ameet Morjaria
Warwick, *BREAD* and *CEPR* Harvard University

January 2012*

“A survey we conducted among exporters in Kenya reveals that relationships with foreign buyers are not governed by written contracts enforceable by courts. The perishable nature of roses makes it unpractical to write and enforce contracts on a supplier's reliability. Upon receiving the flowers, the buyer could refuse payment and claim that the flowers did not arrive in the appropriate condition while the seller could always claim otherwise.”

III.A Formal & Relational Incentive Contracts

(~ Baker, Gibbons, & Murphy *QJE* 94)

Model [updated to $\cos(\theta)$]

- $\Pr(y=1) = a_1$ non-contractible
- $\Pr(p=H) = a_1\cos(\theta) + a_2\sin(\theta)$ contractible
- Cost of effort = $k(a_1^2+a_2^2)/2$
- Agent's outside option = \underline{u}
- Principal's outside option = 0

First-Best

- $a_1 = 1/k$
- $a_2 = 0$
- Total Surplus: $V_{FB} = 1/(2k)$

Spot Contract: $W = s + b \cdot 1_{\{p=H\}}$

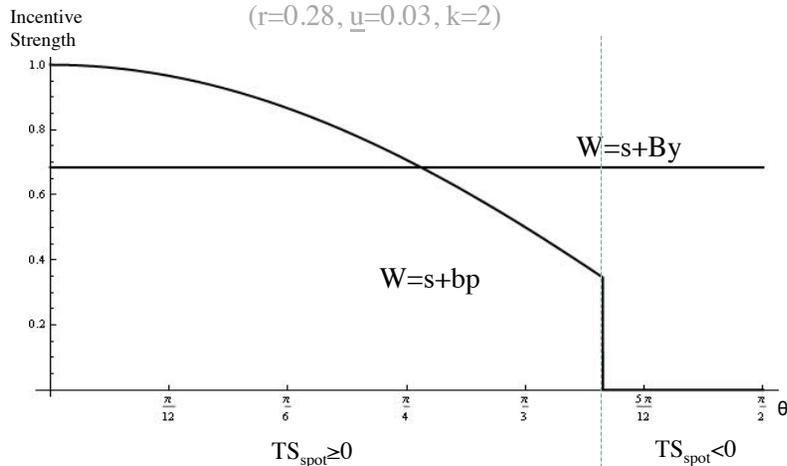
- $U = s + b[a_1\cos(\theta) + a_2\sin(\theta)] - k(a_1^2+a_2^2)/2$
- $a_1 = (b/k)\cos(\theta), a_2 = (b/k)\sin(\theta)$
- $b^* = \cos(\theta)$
- Total Surplus: $V_{spot} = (1/2k)\cos^2(\theta)$

Relational Contract: $W = s + B \cdot 1_{\{y=1\}}$

- First-Best: $B=1$
- FB possible if $V_{FB} - \underline{u} \geq r$
- Second-Best: largest B such that $V_{rel}(B) - \underline{u} \geq rB$
- B_{SB} solves $(1/2k)(2B-B^2) - \underline{u} = rB$

Optimal Spot or Relational Contracts

($r=0.28, \underline{u}=0.03, k=2$)



Formal and relational contracts

$W = s + b \cdot 1_{\{p=H\}} + B \cdot 1_{\{y=1\}}$ [interaction optimally zero]

- $U = s + b[a_1\cos(\theta) + a_2\sin(\theta)] + Ba_1 - k(a_1^2+a_2^2)/2$
- $a_1 = [b \cdot \cos(\theta) + B]/k, a_2 = b \cdot \sin(\theta)/k$
- $b^* = (1-B)\cos(\theta)$
- Total Surplus: $V_{both}(B) = V_{FB} - (1/2k)(1-B)^2\sin^2(\theta)$

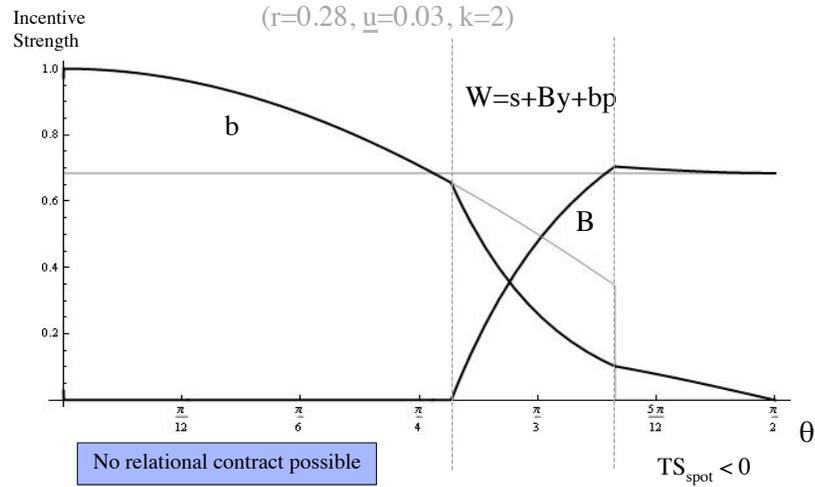
First-Best ($B=1, b=0$) feasible if:

$$V_{FB} - \max\{0, V_{spot}\} \geq r$$

Second-Best: largest B such that

$$V_{both}(b, B) - \max\{0, V_{spot}\} \geq rB$$

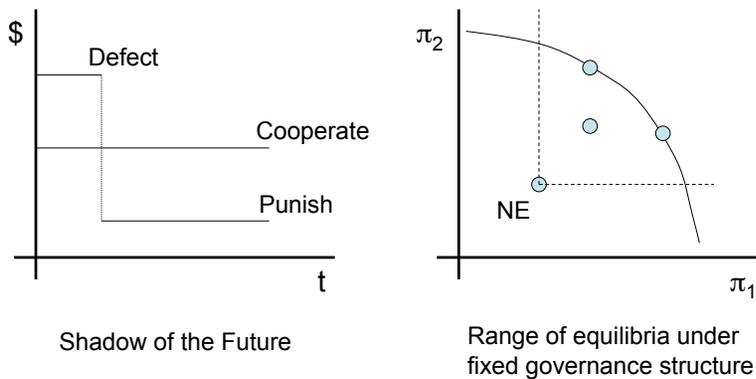
Optimal Spot *and* Relational Contracts



Inefficient Spot Crowds Out Relational

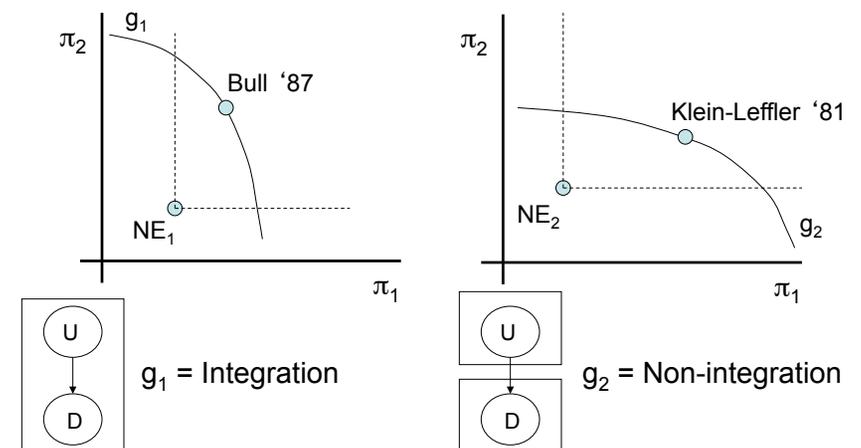
- BGM *QJE* 94
 - Distortionary contract vs. subjective bonus
- Prendergast - Stole *EER* 99
 - Money vs. favor exchange
- Di Tella - McCullough *EJ* 02
 - State welfare vs. family eqbm
- BGM *QJE* 02
 - Spot non-integration vs. relational integration

IV. Within Firms *Versus* Between

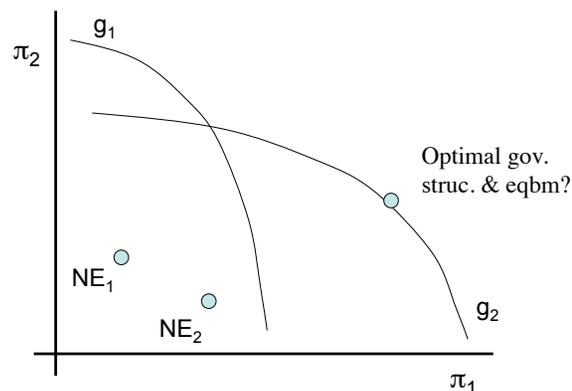


Formal Structures Affect Relational Contracts

(BGM *QJE* 02)



Choosing Formal Structures to Facilitate Relational Contracts



Different ranges under different governance structures

What Do Contracts Do?

(Klein *Rev. Ind. Econ.* 00)

[A]lthough Macaulay and others are correct in noting that *many business relationships are self-enforced*, transactors are not indifferent regarding the contract terms they choose to govern their self-enforcing relationship.

[T]he fundamental economic motivation for the *use of court-enforced terms is to supplement self-enforcement*.

Court-enforced *explicit contract terms are a necessary evil* that are used by transactors solely because the transactors possess limited reputational capital.

“Our best deals were those where we put the contract in a drawer and built the relationship on top.”

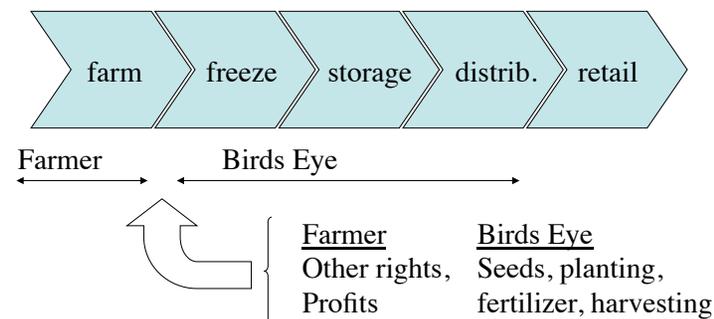
J. Lewent, personal communication, 2002

Merck: 1980-2007

CFO 1990-2007

EVP 2001-2007

III.B Contracting for Control



Evidence on Contracting for Control: Lerner-Merges 98, Arrunada-Garicano-Vazquez 01, Elfenbein-Lerner 03, Kaplan-Stromberg 03, Robinson-Stuart 07, Ryall-Sampson 09, Lerner-Malmendier 10, ...

Organizing Some Literature

		Effect	
		<i>Ex ante</i> incentives	<i>Ex post</i> adaptation
Method	Ownership (Changing firm boundaries)	Grossman-Hart '86 ... (words)	Hart-Holmstrom '10 ...
		Woodruff '02 ...	Forbes-Lederman '09? ...
	Contract (Fixed firm boundaries)	Aghion-Tirole <i>QJE</i> '94 ... (words)	Aghion-Bolton '92 ...
		Lerner-Merges '98 ...	Arrunada-Garicano-Vazquez '01 ...

Elemental Adaptation Model

Gibbons *JEBO* 2005

- 2 parties $i \in \{1, 2\}$
- state $s \in S$
- alienable DR $d \in D$
- private benefit $\pi_i(d, s)$
- $d_i^*(s)$ solves $\max_{d \in D} \pi_i(d, s)$
- $d^{FB}(s)$ solves $\max_{d \in D} \pi_1(d, s) + \pi_2(d, s)$

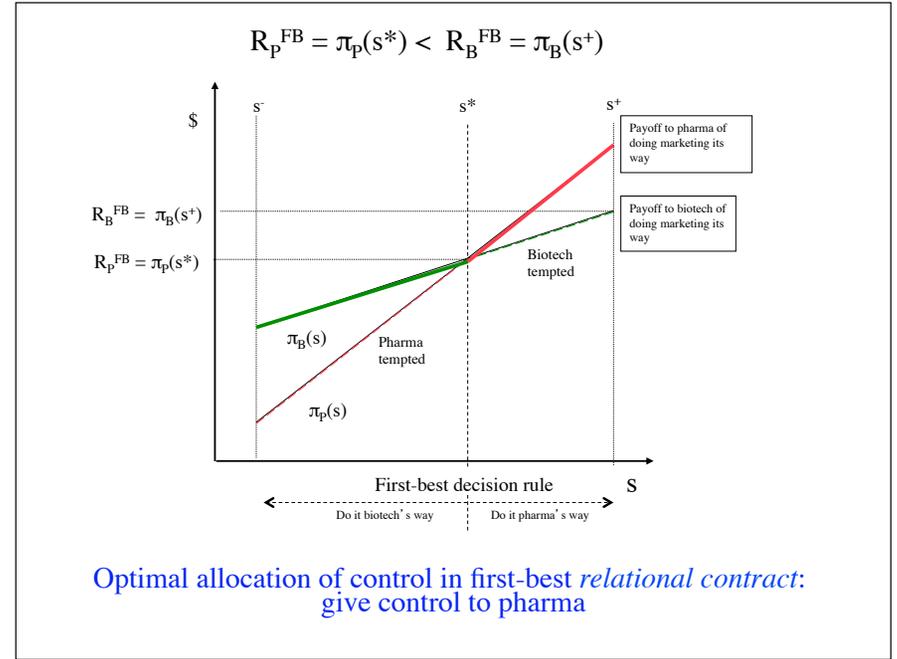
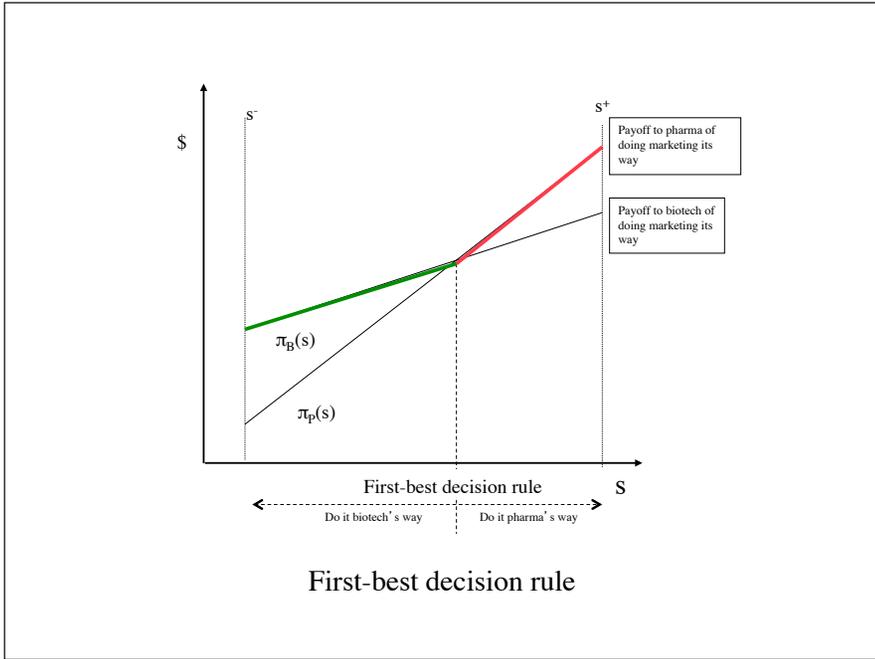
Timing of Adaptation Model

1. Gov. structure allocate control to i or j
 2. ---
 3. State $s \in S$ realized
 4. Ex post decisions $d \in D$ *non-contractible*
 5. Payoffs $\pi_i(d, s), \pi_j(d, s)$
- *Decision right* contractible ex ante (not ex post?)
 - *Decision* not contractible ex post (\rightarrow no renegotiation)

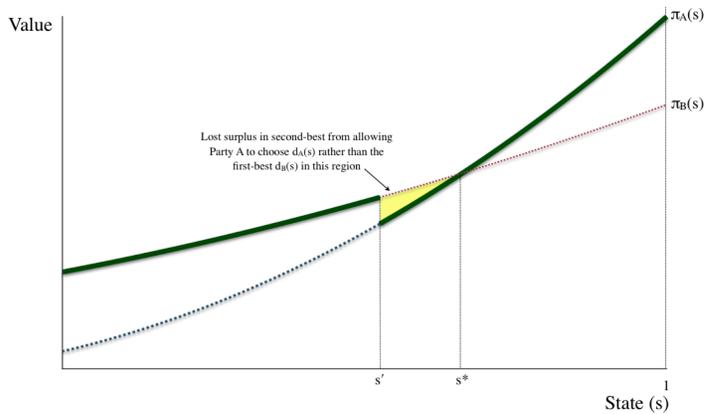
Effectively Binary Decision

BGM WP 2011

- $d_i^*(s)$ solves $\max_{d \in D} \pi_i(d, s)$
- given s , only $d_i^*(s)$ and $d_j^*(s)$ are of interest:
 - $\pi_i(d_i^*(s), s) = \pi_i(s) > 0$
 - $\pi_i(d_j^*(s), s) = 0$
 - $\pi_i(d, s) \ll 0$ otherwise
- $d^{FB}(s) = d_i^*(s)$ or $d_j^*(s)$



Second-Best Governance Structure & Relational Contract



A control; reducing temptation vs. reducing surplus

V. Implications for Productivity

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What Do Managers Do?

Exploring Persistent Performance Differences among Seemingly Similar Enterprises

Robert Gibbons and Rebecca Henderson

Arguments in GH *HOE* 2013

1. There exist *persistent performance difference* (PPDs) among seemingly similar enterprises. Syverson *JEL* 11 + Sec. 2
2. Understanding PPDs matters for business strategy, government policy, and economic research.
3. Proxies for *management practices* are correlated with these performance differences. BVR *QJE* 07 + Sec. 3
4. Many of these management practices rely on *relational contracts*. Gibbons-Henderson *Org Sci* 12 + Sec. 4
5. Economic models of *building and changing* relational contracts have arrived. Sec. 5
6. Building and changing relational contracts remains *more difficult* than most theory has described. Sec. 6

Example 4: “ProPub” @ Merck

(Henderson & Cockburn *SMJ* 94)

- bio-tech revolution \Rightarrow science-based discovery
 - hire PhDs, build labs, attend confs, do research, *publish papers!*
 - “ProPub” \rightarrow patents (e.g., @ Merck)
- Imagine recruiting first rookie @ Merck:
 - better lab, less teaching, better pay
 - *almost* like asst. prof.
 - but clearly not identical
 - e.g., Nobel in 3rd year with no drugs

References

- Aguilar, Francis and Arvind Bhambri. 1983. “Johnson & Johnson (A), (B).” HBS Cases #384-053 and -054.
- Baker, George, Robert Gibbons, and Kevin Murphy. 1994. “Subjective Performance Measures in Optimal Incentive Contracts.” *QJE*
- Baker, George, Robert Gibbons, and Kevin Murphy. 2002. “Relational Contracts and the Theory of the Firm.” *QJE*
- Baker, George, Robert Gibbons, and Kevin Murphy. 2011. “Relational Adaptation.” Working Paper
- Di Tella, Rafael, and Robert McCullough. 2002. “Informal Family Insurance and the Design of the Welfare State.” *EJ*
- Fast, Norman and Norman Berg. 1975. “The Lincoln Electric Company.” HBS Case #376-028.
- Gibbons, Robert. 2005. “Four Formal(izable) Theories of the Firm?” *JEBO*

References

- Gibbons, Robert and Rebecca Henderson. 2012. “Relational Contracts and Organizational Capabilities.” *Organization Science*
- Henderson, Rebecca, and Iain Cockburn. 1994. “Measuring Competence? Exploring Firm Effects in Pharmaceutical Research.” *SMJ*
- Klein, Benjamin. 2000. “The Role of Incomplete Contracts in Self-Enforcing Relationships.” *Revue D’Économie Industrielle*
- Prendergast, Canice, and Lars Stole. 1999. “Restricting the Means of Exchange Within Organizations.” *EER*