On Building a Conflict Culture in Organizations

by W. Bentley MacLeod[a], Victoria Valle Lara[b], Christian Zehnder[b]

[a] Columbia University [b] University of Lausanne

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Outline

Introduction

The Experimental Production Environment

The Treatment and Experiments

Characterizing Behavior

Measuring Norms

Measuring Adherence to a Culture

Discussion

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Contribution

1. We provide a precise definition of a corporate culture and suggest a way to measure cultural adherence.
2. We show that culture can be manipulated in the laboratory.
3. These manipulations are imperfect and hence our results are consistent with fact that firms with similar technologies can vary in organizational effectiveness (Bloom et al. (2012)).

The Agency Approach

- The agency approach focuses upon the need to provide individuals in an organization with the appropriate incentives to align actions with organizational goals (Jensen and Meckling (1976), Lazear (1986)).
- Organizational dysfunction is explained by the quality of information regarding performance (Holmström (1979); Harris and Raviv (1979)). Increasing the quality of information increases performance.
- However, agency theory is cannot explain many of the features of organizations, including dysfunctional behaviors (Kerr (1975), Gibbons (1997) and Prendergast (1999))

The Relational Approach

- We begin with a principal-agent environment with subjective evaluation - principal and agent may disagree regarding performance.
- We explore the impact of *increasing* agent power by giving the agent the right to impose a cost upon the principal.
- One view is that increasing worker power may increase worker rents, but decrease organizational effectiveness.
- The relational view (MacLeod and Malcomson (1989), Baker et al. (1994),Levin (2003) and Brown et al. (2004)) suggests that the right to impose costs on a counter party may enhance performance.

Results in a Nutshell

- In all of our experiments the unique sub-game perfect Nash equilibrium is low effort, no bonus pay and no conflict - this prediction is soundly rejected by the evidence
- Giving agents more power increases the incidence of bonus pay by the principal - the rent effect.
- However, providing more power can increase overall performance if parties coordinate their actions, i.e. adopt a productive culture that rewards performance with pay.
- Coordination is difficult to achieve, and we observe the best performance with agents who are given power via a formal grievance procedure.

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The Treatment and Experiments

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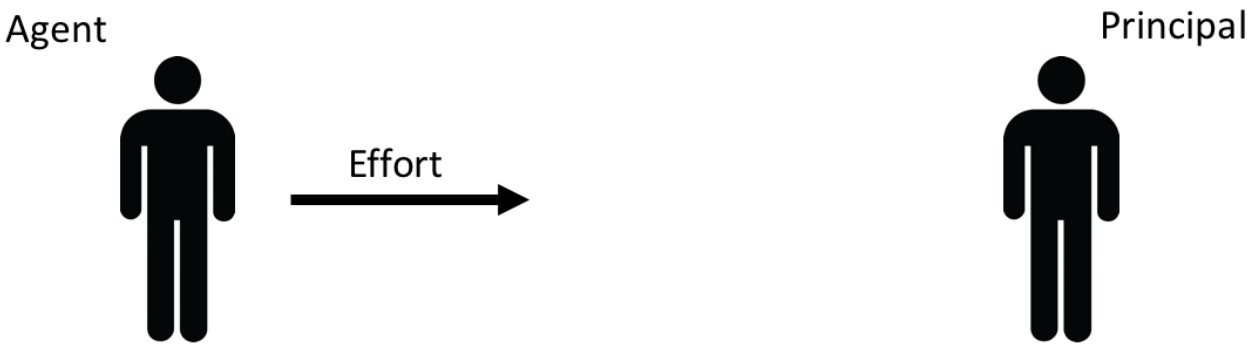
Measuring Adherence to a Culture

Discussion

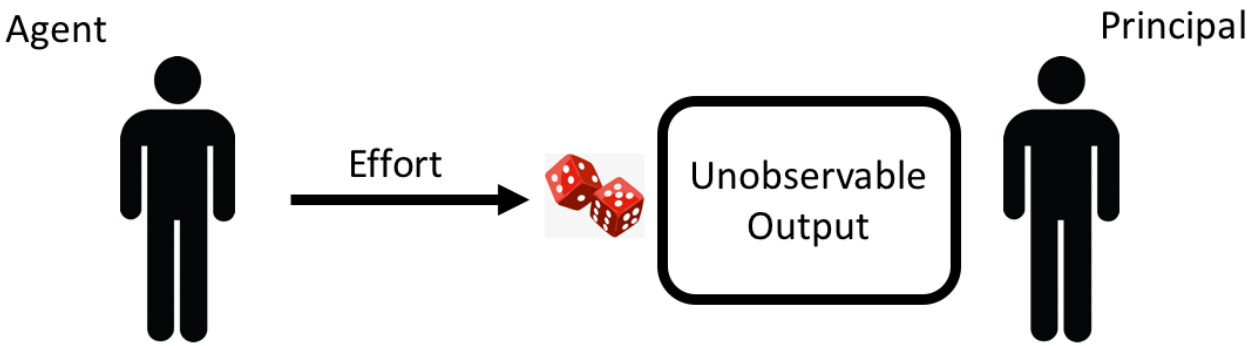
Principal and Agent (Based upon MacLeod (2003))



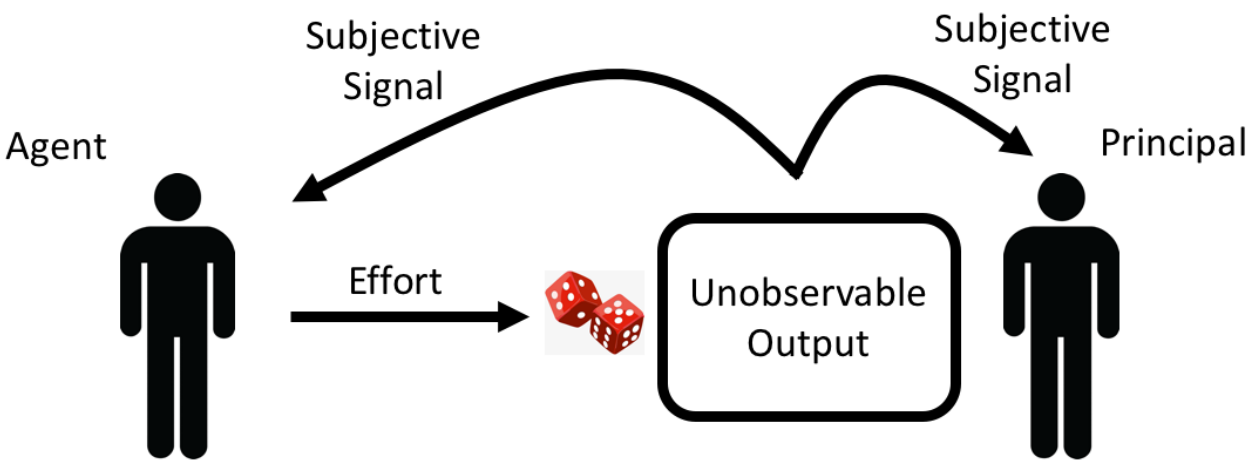
Agent Chooses Effort



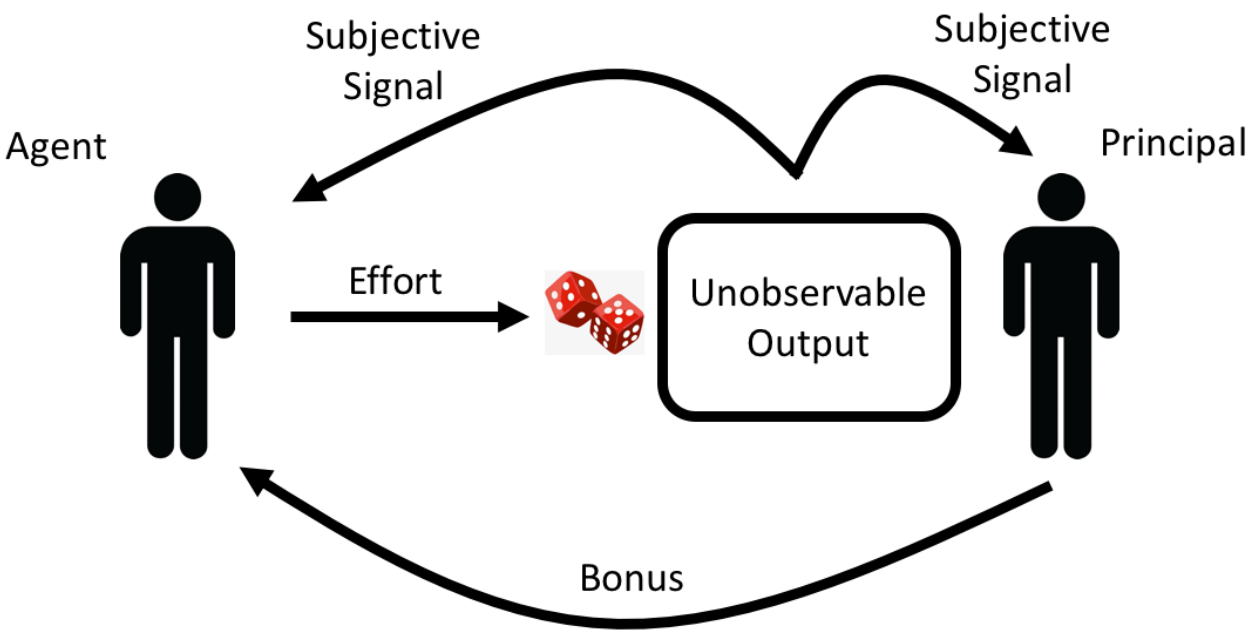
Noisy Output



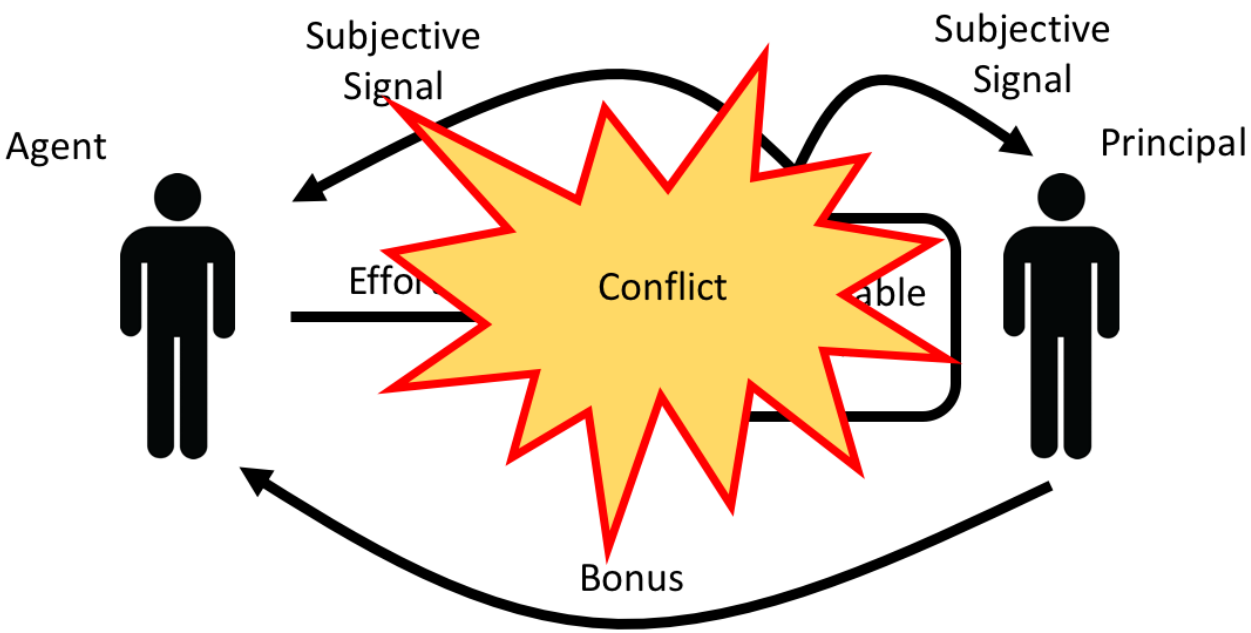
Parties Observe Private Performance Signal



Principal Chooses Bonus



Agent who feels unfairly treated imposes cost



Procedure

- 15 identical periods with random re-matching (stranger design)
- 52 sessions over several years (2012-2017): 1044 participants
- LABEX University of Lausanne
- Average payment: CHF 35 (90 minutes)
- Experiment: z-Tree (Fischbacher (2007))
- Recruitment: ORSEE (Greiner (2015))

Baseline Timeline

1. Worker's unobserved effort choice: $e \in \{e_L, e_H\}$
   Cost of effort $c(e_l)$
2. Stochastic output: $y \in \{y_L, y_H\}$
3. Private signals imperfectly correlated with performance: $s_P, s_A \in \{L, H\}$
4. Principal's bonus choice: $b \in \{0, b\}$
   Compensation: $w + b$, where $w = 100$
5. Worker's choice to engage in conflict: $p \in \{0, 1\}$
   - Worker's cost: $c(p) = 10p$
   - Damage inflicted on principal: $d(p) = 100p$

Parameters

1. Worker's effort choice: $e \in \{e_l, e_h\}$
   Cost of effort $c(e_l) = 0$ and $c(e_h) = 10$
2. Stochastic output: $y \in \{y_l, y_h\}$
   Low output $(y^h) = 150$, High output $(y^l) = 350$
   $P(y^h \mid e^h) = P(y^l \mid e^l) = 0.85$
3. Subjective correlated signals: $s_p, s_a \in \{L, H\}$
   Principal: $P(s_p = L \mid y^l) = P(s_p = H \mid y^h) = 0.75$
   Agent $P(s_a = L \mid y^l) = P(s_a = H \mid y^h) = 0.75$
4. Principal's bonus choice: $b \in \{0, b\}$
   Compensation: $w + b$, where $w = 100$
5. Worker's choice to engage in conflict: $p \in \{0, 1\}$
   Worker's cost: $c(p) = 10p$
   Damage inflicted on principal: $d(p) = 100p$

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Treatment and Experiments

- Four experiments: Baseline, Communication, Code of Conduct, Code of Conduct with Grievance.
- In each experiment there are two treatments:
  - No Conflict - relationship ends after bonus stage.
  - Conflict - after bonus stage, workers is instructed as follows:
    - After you have been informed about the employer's bonus decision, you can decide whether or not you would like to reduce the return which you have produced for the employer. You can reduce the return by at most 80 points. However, reducing the return is also costly for you: for each point that you deduct from the return you have to pay 0.1 points out of your own profit. For example, you decide to reduce the return by 50 points, you need to pay 5 points out of your own profit. If you decide not to reduce the return, nothing happens and the profits of the employer and your own profit are unaffected.

Communication Experiment

Bonus

I will not pay the bonus.
I will pay the bonus
I will pay the bonus if
- I have the impression that you exerted high effort.
- my private information indicates a high return.

Conflict

I will always reduce the return.
I will never reduce the return.
I will reduce the return if
- I do not get the bonus.
- I do not get the bonus although I got a good signal.

Effort

I will exert high effort.
I will exert low effort.

Code of Conduct Experiment

Working Agreement

The worker and the employer accept:

1. Activity

The worker must exert a high level of effort to increase the probability that the employer receives a high return.

2. Duration

The working relationship begins when both worker and employer accept the agreement until the end of the period.

3. Wage

a) The employer must pay the worker a fix salary of 100 points

b) The employer must pay a bonus of 50 points if his subjective information indicates that the return is high.

Code of Conduct with Grievance

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4. Complaint report

a) If the subjective information of the workers indicates a high return, and he did not receive a bonus, the worker must file a report that imposes a fine of 100 points to the employer.

b) In every other case, i.e., if the bonus is paid or the subjective information of the worker indicates a low return, the worker must

Results Summary

Experiment		Bonus		Effort		Surplus	
	Conflict?	No	Yes	No	Yes	No	Yes
	Baseline	14%	42%	40%	48%	234	227
	Communication	22%	69%	52%	59%	244	238
	Code of Conduct	23%	43%	49%	52%	243	225
	Code-Grievance	**20%**	**52%**	**44%**	**64%**	**237**	**244**
	Summary	20%	58%	46%	56%	240	233

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Introduction

The Experimental Production Environment

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Self-Interest Types (SI)

- Environment is simple enough that we can identify a limited number of possible behaviors.
- The self-interest type is the one we normally use in economics:
  - Actions maximize material payoffs and this common knowledge.
- This implies the subgame-perfect Nash equilibrium:
  - In last period since conflict has a cost and no gain, Agent never initiates conflict.
  - For the Principal, paying a bonus is a cost is no benefit, hence no bonus pay.
  - For the Agent, choosing high effort is not rewarded, hence zero effort.

Pay for Input Types (PI)

- A reciprocal frame is one where the Agent agrees to provide effort in exchange for a bonus (eg Fehr et al. (1997)).
- Agent chooses high Effort
- Principal trusts the Agent and Pays the Bonus.
- If Principal does not pay (and hence the Agent feels he is not trusted) Agent imposes a cost upon the Principal.

Pay for Output Types (PO)

- A "performance" frame is one where the Principal rewards observed performance:
- Agent chooses high effort.
- Principal observes private signal and pays bonus iff signal is high
- Agent observes private signal and feels unfairly treated if he observes high signal and gets no bonus - in that case Agent initiates conflict.
- Bonus payments may be motivating even for selfish workers

Social Surplus

		Worker		
		Self-Interest (E=0)	Pay for Input (E=1)	Pay for Output (E=1)
Principal	Self-Interest	180	200	236
	Pay for Input	180	310	290
	Pay for Output	180	274	290

Norms and Culture

Norms: Behavior that an individual is suppose to follow
Culture: Interlocking norms (Kreps (1990), Greif (1994)) = Norm Equilibrium

Culture = Norm Equilibrium

- In practice (chess) individuals cannot contemplate all possible strategies.
- This suggests the notion of a "Norm Equilbrium: consisting of:
  - Strategies:

$$\Sigma_P = \left\{ \sigma_P^{PI}, \sigma_P^{PO}, \sigma_P^{R} \right\},$$
$$\Sigma_W = \left\{ \sigma_W^{PI}, \sigma_W^{PO}, \sigma_W^{R} \right\}.$$

  - Payoffs $U_P(\sigma_P, \sigma_W)$ and $U_W(\sigma_P, \sigma_W)$.
  - A norm equilibrium is a Nash equilbrium with strategies limited to the norms.

Gain from Norm Deviation (Norm Payoff Normalized to Zero)

		Worker					
		Self-Interest (E=0)		Pay for Input (E=1)		Pay for Output (E=1)	
		Principal	Worker	Principal	Worker	Principal	Worker
Principal	Self-Interest	0	0	-50	-20	-15	-16.75
	Pay for Input	-50	10	0	0	-16.25	-1.88
	Pay for Output	-16.25	-5.63	-16.25	-1.38	0	0

Can we build a culture?

- Next we report results from four experiments that compare conflict with no conflict.
- The question we ask:
  - What do individuals do without guidance? (Little coordination - self-interest rules)
  - When they communicate do they choose a particular culture? (Agents tend to pay-for-input, Principals only in case with conflict)
  - Does a code of conduct affect behavior? (Conflict induces induces pay-for-output, but does costs outweights benefits)
  - Does institutionalizing conflict affect the culture? (Conflict treatment more efficient than no conflict treatment)

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Introduction

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Discussion

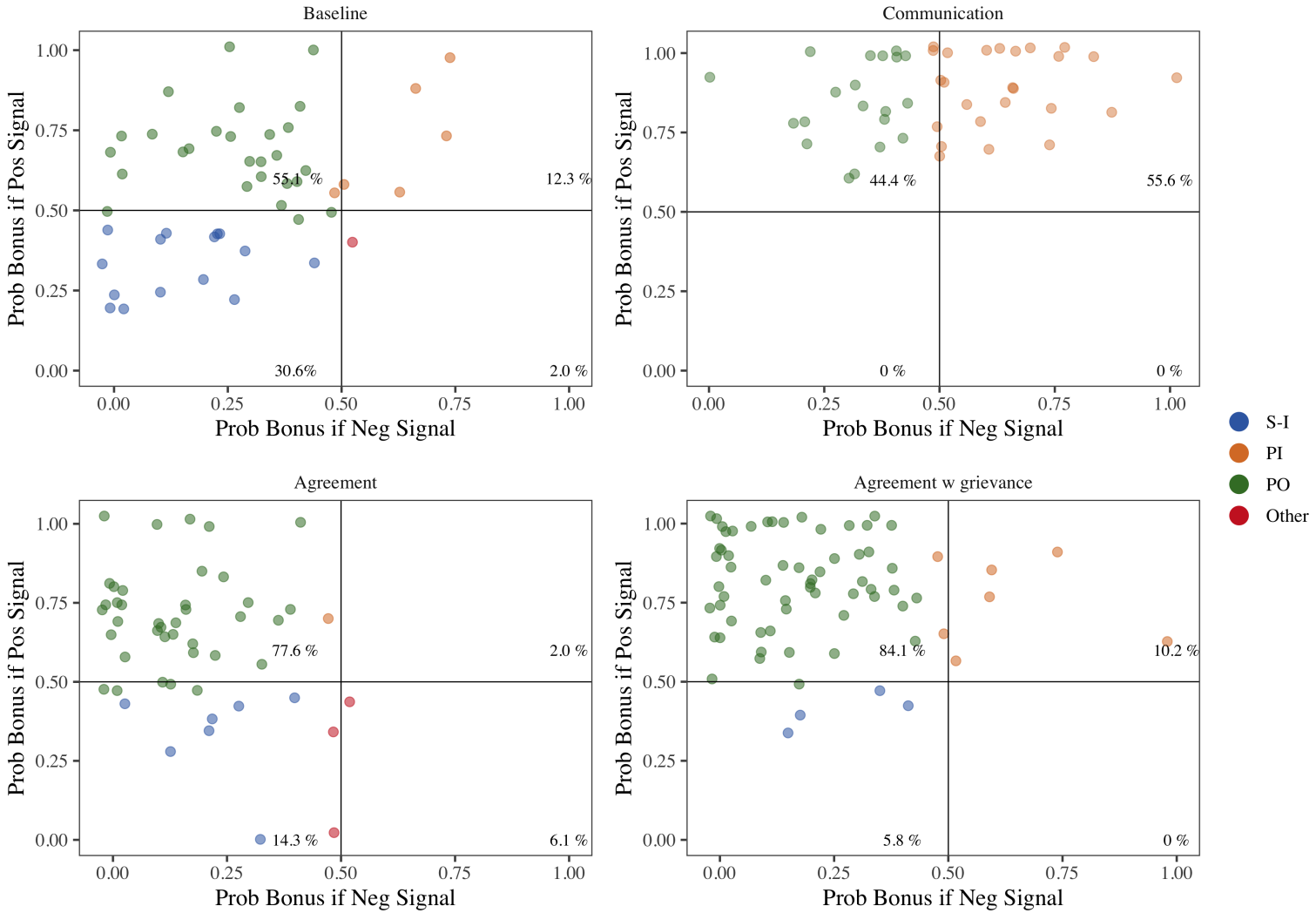
Measuring Behavioral Norms

- In this experiment, holding the conflict institution fixed, behavior does change across treatments.
- In this section we measure compliance to one of the three cultures - SI, PI and PO.

Solution

- We measure norm compliance by:
  - exploiting the fact that game has a binary tree structure.
  - Each norm induces a probability distribution over the end nodes of the game.

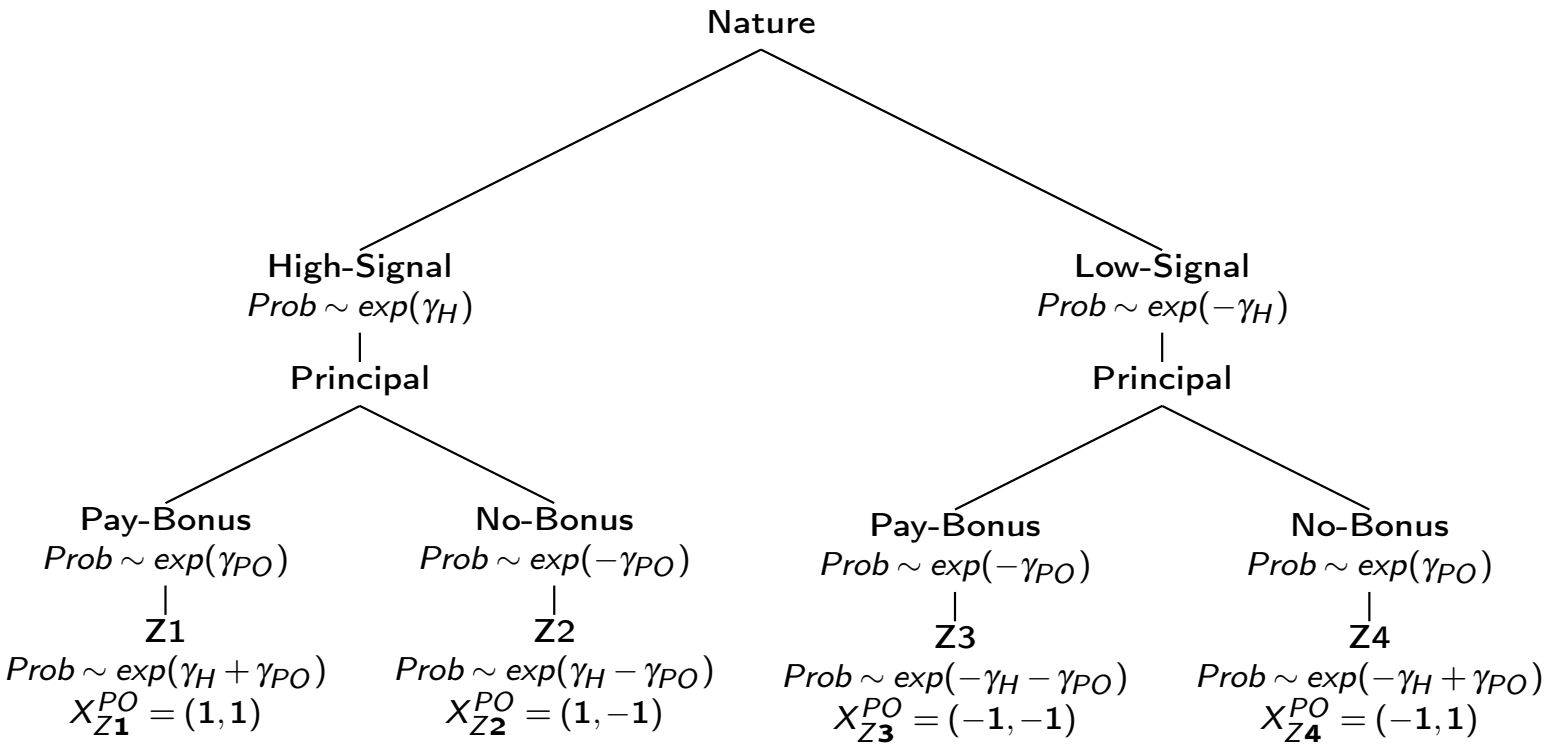
Principal's Behavior in a Snapshot



Making the Visual Precise

- We can see general tendencies in the data.
- However, these can be clearly influenced by framing biases on the part of the researcher.
- We can makes things more precise by measuring the distance between the observed probability distribution and the distribution implied by a norm/culture.

Principal's Behavior



Estimating Behavior

- Terminology $P \sim exp(\gamma_H)$ means:

$$Prob[s_P = H] = \frac{exp(\gamma_H)}{exp(\gamma_H) + exp(-\gamma_H)}. \quad (1)$$

- Notice that as $\gamma_H \to \infty$, then

$$Prob[s_P = H] = Prob[s_P = L] \to 1.$$

- Outcomes for Principal are denoted by $z \in Z_P = \{Z1, ..., Z4\}$:

$$Prob[z] = logit(X_z^{norm} \vec{\gamma}_{norm}), \quad (2)$$

where:

$$\vec{\gamma}_{norm} = \begin{bmatrix} \gamma_H \\ \gamma_{norm} \end{bmatrix}.$$

Probability of Choosing Bonus = b when $s_P = H$:

- Pay for Output:

$$\frac{exp(\gamma_{PO})}{exp(\gamma_{PO}) + exp(-\gamma_{PO})}$$

- Pay for Input:

$$\frac{exp(\gamma_{PI})}{exp(\gamma_{PI}) + exp(-\gamma_{PI})}$$

Observations:

1. Principal is closer to pay for output when γ_{PO} is large, similar for pay for input.
2. If $\gamma_{PI} < 0$, this is closer to rational/mean behavior - the Principal never wants to pay the bonus.
3. Since we have a logit model, then the model parameters, $\gamma_H, \gamma_{PO}, \gamma_{PI}$, can be estimated using standard multi-nomial logit package. We can see how these parameters change a across treatments, and which model (pay for Input or pay for output) is best.

Norm Model for the Principal

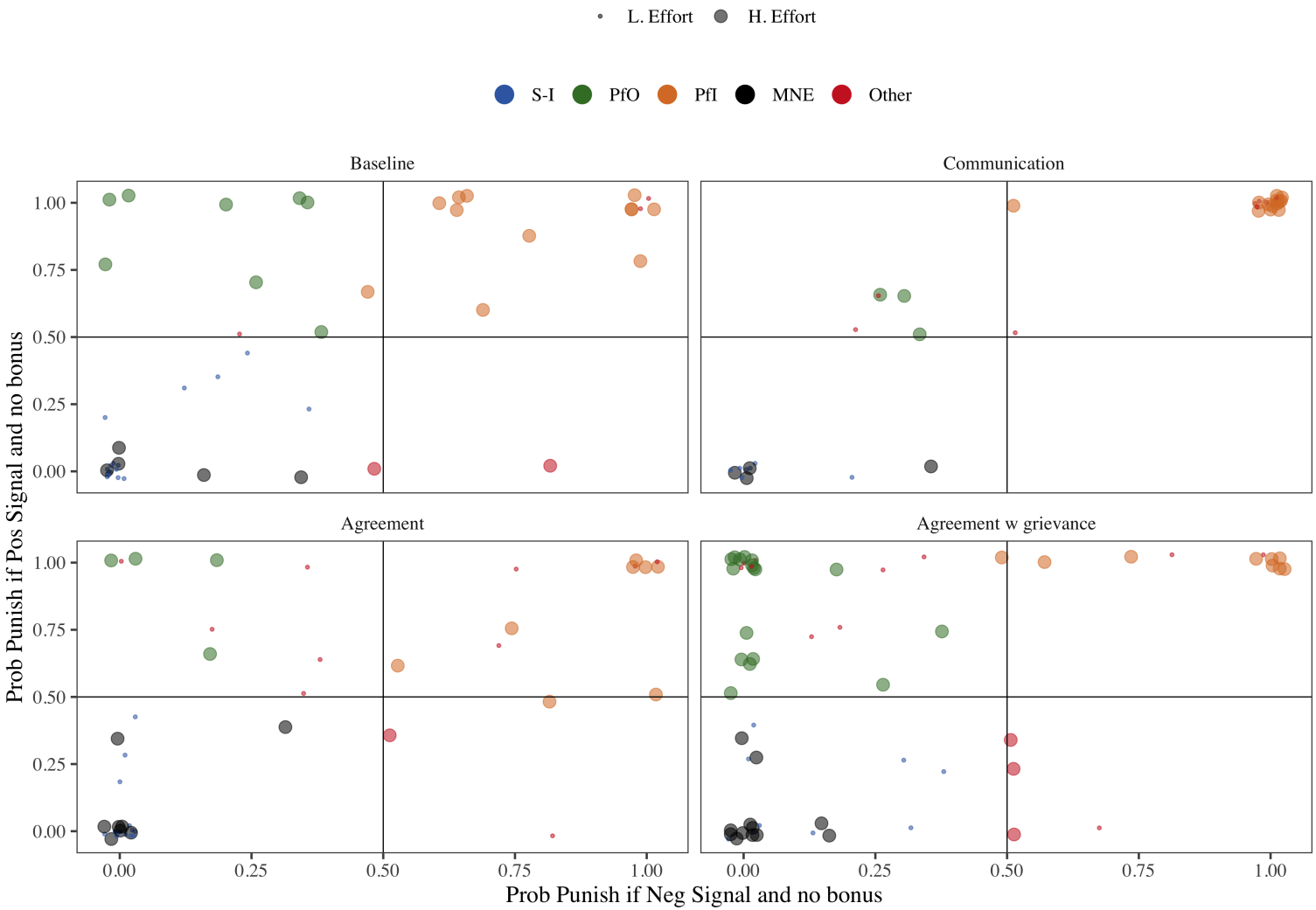
$Z_{Principal}$	Principal Signal	Bonus Paid?	X_Z^{PO}	X_Z^{PI}	X_Z^R
Z1	High	Yes	$(1,1)$	$(1,1)$	$(1,-1)$
Z2	High	No	$(1,-1)$	$(1,-1)$	$(1,1)$
Z3	Low	Yes	$(-1,-1)$	$(-1,1)$	$(-1,-1)$
Z4	Low	No	$(-1,1)$	$(-1,-1)$	$(-1,1)$

Estimated Norms of the Principal by Experiment

	No Conflict		Conflict	
	Pay for Output	Pay for Input	Pay for Output	Pay for Input
Baseline: γ_P	0.250^{***}	-0.894^{***}	0.298^{***}	-0.149^{***}
	(0.037)	(0.051)	(0.039)	(0.037)
Communication: :γ_P	0.288^{***}	-0.628^{***}	0.394^{***}	0.401^{***}
	(0.041)	(0.047)	(0.042)	(0.042)
Code of Conduct:γ_P	0.330^{***}	-0.590^{***}	0.496^{***}	-0.145^{***}
	(0.039)	(0.043)	(0.042)	(0.038)
Code+Grievance γ_P	0.332^{***}	-0.687^{***}	0.678^{***}	0.043
	(0.034)	(0.040)	(0.038)	(0.031)
Observations	3,861	3,861	3,907	3,907
Log Likelihood	−5,170.481	−4,637.513	−4,879.431	−5,313.196

Note: *p<0.1; **p<0.05; ***p<0.01, errors clustered by session.

Agent's Behavior in a Snapshot



Norm Model for the Agent

Z_{Worker}	Worker Signal	Bonus Paid?	Principal Punished?	X_Z^{PO}	X_Z^{PI}	X_Z^R
Z1	High	Yes	No	$(1, 0, 1, 1)$	$(1, 0, 1, 1)$	$(1, 0, 1, 1)$
Z2	High	No	No	$(1, 0, -1, -1)$	$(1, 0, -1, -1)$	$(1, 0, -1, 1)$
Z3	Low	Yes	No	$(-1, 1, 0, 1)$	$(-1, 1, 0, 1)$	$(-1, 1, 0, 1)$
Z4	Low	No	No	$(-1, -1, 0, 1)$	$(-1, -1, 0, -1)$	$(-1, -1, 0, 1)$
Z5	High	Yes	Yes	$(1, 0, 1, -1)$	$(1, 0, 1, -1)$	$(1, 0, 1, -1)$
Z6	High	No	Yes	$(1, 0, -1, 1)$	$(1, 0, -1, 1)$	$(1, 0, -1, -1)$
Z7	Low	Yes	Yes	$(-1, 1, 0, -1)$	$(-1, 1, 0, -1)$	$(-1, 1, 0, -1)$
Z8	Low	No	Yes	$(-1, -1, 0, -1)$	$(-1, -1, 0, 1)$	$(-1, -1, 0, -1)$

Agent Behavior by Treatment

Experiment	Low Effort			High Effort		
	(Self-Interest)	(Pay for Input)	(Pay for Output)	(Self-Interest)	(Pay for Input)	(Pay for Output)
Baseline	0.780^{***}	-0.057	0.466^{***}	0.336^{***}	0.521^{***}	0.536^{***}
	(0.067)	(0.051)	(0.057)	(0.057)	(0.061)	(0.061)
Communication	0.569^{***}	0.639^{***}	0.608^{***}	0.617^{***}	0.890^{***}	0.709^{***}
	(0.070)	(0.072)	(0.071)	(0.060)	(0.072)	(0.064)
Code of Conduct	0.793^{***}	-0.038	0.543^{***}	0.481^{***}	0.461^{***}	0.542^{***}
	(0.072)	(0.054)	(0.062)	(0.058)	(0.057)	(0.059)
Code+Grievance	0.876^{***}	0.070	0.740^{***}	0.682^{***}	0.595^{***}	0.811^{***}
	(0.073)	(0.052)	(0.067)	(0.048)	(0.046)	(0.052)
Observations	1,588	1,588	1,588	2,319	2,319	2,319
Log Likelihood	$-3{,}864.113$	$-4{,}150.913$	$-3{,}971.681$	$-5{,}837.546$	$-5{,}790.553$	$-5{,}691.499$
Note:						*p<0.1; **p<0.05; ***p<0.01, clustered by session

Results

- Low effort agents are closer to the self-interest norm, but not perfectly, in the absence of communication.
- Communication leads to more weight on pay-for-input, particularly when workers choose high effort.
- Code of conduct with grievance leads to more compliance with PO than PI.

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Measuring Adherence to a Culture

- Adherence to a culture requires interlocking choices.
- We can use the method above applied to the whole market.
- This allows to ask if one norm is dominant from a goodness of fit perspective.

Adherence to a Culture

Experiment	Cultural Adhence with Conflict		
	(Self-Interest)	(Pay for Input)	(Pay for Output)
Baseline	0.462***	0.391***	0.427***
	(0.059)	(0.047)	(0.047)
Communication	-0.265**	0.845**	0.698***
	(0.074)	(0.044)	(0.044)
Code of Conduct	0.438***	0.458***	0.578***
	(0.047)	(0.046)	(0.045)
Code+Grievance	0.240***	0.711***	0.889***
	(0.044)	(0.034)	(0.034)

Note: *p<0.1; **p<0.05; ***p<0.01

Which Culture Fits Best?

	Log Likelihood			Is a Norm Dominant at 1% significance levels		
Experiment	R	PI	PO	R	PI	PO
Baseline	**-2,346.5**	-2,364.8	-2,358.2	Yes	No	No
(p-value)				(0.1)	(0.90)	(0.78)
Communication	-2,186.4	**-2,023.7**	-2,082.4	No	Yes	No
(p-value)				(1.00)	(0.00)	(1.00)
Code of Conduct	-2,264.0	-2,259.4	**-2,229.2**	No	No	Yes
(p-value)				(0.98)	(1.00)	(0.02)
Grievance	-3,384.3	-3,208.1	**-3,086.5**	No	No	Yes
(p-value)				(1.00)	(1.00)	(0.00)

Notes: P-values based upon non-nested Vuong test where the null hypothesis is that two norms are indistinguishable compared to a single norm. The comparison is always made to the best alternative model as measured by the likelihood value or p-value.

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Goal of Experiment

- Conflict in organizations is ubiquitous.
- Yet, most of the research in both management and economics views conflict as an avoidable costs.
- We find that under the appropriate conditions performance is *enhanced* by giving employees more power!

Effects of Conflict

- We experimentally turn conflict off and on and find:
  - The potential for conflict increases the frequency of rewards by the Principal (rent effect).
  - Effort by the Agent is correspondingly higher (coordination effect).
- However, we find strong evidence that context matters - varying the nature of pre-play communication between Principal and Agent has a large effect upon behavior - the hypothesis that parties play the subgame perfect Nash equilibrium is strong rejected!

Culture Matters!

- However, giving employees more power comes with a caveat - it does necessarily improve performance:
  - We identify three potential cultures in our environment and find that without coordination parties do not follow a particular norm or culture.
- We can prime a more efficient culture by giving workers power via a formal grievance procedure combined with clearly specified behavioral expectations.

Conclusion

- There is a great deal of evidence that management matters.
- The open question is why and how can we improve organizational effectiveness.
- In this paper we have shown that when performance evaluations are subjective, a feature of most employment relationships, then organizational conflict is an unavoidable feature of the employment relationship.
- Moreover, we have found that the introduction of formal institutions can help coordinate behavior, reduce organizational conflict and potentially increase organizational performance.

Baker, G., R. Gibbons, and K. J. Murphy (1994, November). Subjective performance measures in optimal incentive contracts. *The Quarterly Journal of Economics 109*(439), 1125–1156.

Bloom, N., C. Genakos, R. Sadun, and J. V. Reenen (2012, February). Management practices across firms and countries. NBER Working Papers 17850, National Bureau of Economic Research, Inc.

Brown, M., A. Falk, and E. Fehr (2004, May). Relational contracts and the nature of market interactions. *Econometrica 72*(3), 747–780.

Fehr, E., S. Gächter, and G. Kirchsteiger (1997, July). Reciprocity as a contract enforcement device: Experimental evidence. *Econometrica 65*(4), 833–860.

Fischbacher, U. (2007, #jun#). z-tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics 10*(2), 171–178.

Gibbons, R. (1997). Incentives and careers in organizations. In D. M. Kreps and K. F. Wallis (Eds.), *Advances in Economics and*

Econometrics: Theory and Applications, pp. 1–37. Cambridge, UK: Cambridge University Press.

Greif, A. (1994, October). Cultural beliefs and the organization of society: A historical and theoretical reflection on collectivist and individualist societies. *Journal of Political Economy 102*(5), 912–950.

Greiner, B. (2015, Jul). Subject pool recruitment procedures: organizing experiments with orsee. *Journal of the Economic Science Association 1*(1), 114–125.

Harris, M. and A. Raviv (1979). Optimal incentive contracts with imperfect information. *Journal of Economic Theory 20*, 231–259.

Holmström, B. (1979). Moral hazard and observability. *Bell Journal of Economics 10*(1), 74–91.

Jensen, M. and W. Meckling (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics 3*(4), 305–60.

Kerr, S. (1975, December). On the folly of rewarding A, while hoping for B. *Academy of Management Journal 18*(4), 769–783.

Kreps, D. M. (1990). Corporate culture and economic theory. In J. E. Alt and K. A. Shepsle (Eds.), *Perspectives on Positive Political Economy*, pp. 90–143. Cambridge, U.K.: Cambridge University Press.

Lazear, E. P. (1986). Salaries and piece rates. *Journal of Business 59*, 405–431.

Levin, J. (2003). Relational incentive contacts. *American Economic Review 93*(3), 835–857.

MacLeod, W. B. and J. M. Malcomson (1989, March). Implicit contracts, incentive compatibility, and involuntary unemployment. *Econometrica 57*(2), 447–480.

Prendergast, C. (1999, March). The provision of incentives in firms. *Journal of Economic Literature 37*(1), 7–63.