

Non-Financial Incentives

Class 7

Late Parents

- Many parents are late in picking up their kids from daycare
- How can the daycare manager provide incentives to parents to pick up their kids on time?



Pitfalls of Tying Pay to Outcomes

- $\partial w / \partial q = b \approx 0$ in many occupations
- $b = 1 / (1 + r(\theta - \rho^2))$
 - Agent extremely risk averse ($r \rightarrow \infty$)
 - Lack of control over output ($\theta \rightarrow \infty$)
 - Lack of good signals of performance ($\rho \rightarrow 0$)
- Other Explanations:
 - Multiple tasks
 - **Non-financial incentives** (today)
 - Imperfect performance measures

Financial and Non-Financial Incentives

- Financial incentives
 - Increase income
 - Avoid financial risk

- Non-financial incentives
 - Intrinsic Motivation
 - Reciprocity
 - Social Approval



Can non-financial incentives improve performance?
How do financial and non-financial incentives interact?

Objectives for Today

1. Intrinsic Motivation
2. Reciprocity
3. Social Approval
4. Interaction between Financial and Non-Financial incentives

Financial Incentives

- Suppose $E[q]=e$ and $c(e)=0.5e^2$
 - The optimal action is then $e^*=1$.
- Suppose:
 - the agent's action can be observed but not verified
 - The agent's pay is independent of performance (e.g. salary)
 - The agent provides $e = 0$!
- Can non-financial incentives induce $e > 0$ with salary contract?

Intrinsic Motivation

- The agent may care about the outcome
- $E[U] = \alpha E[q] + E[w] - c(e)$
 - α represents the extent to which the agent's and principal's incentives are aligned
 - $\alpha=0$ the agent is completely selfish
 - $\alpha=1$ the incentives of principal and agent perfectly aligned
- Examples
 - Altruism
 - Professional ethics (e.g. physicians)
 - Motivated agents (e.g. civil service)



Efficiency and Intrinsic Motivation

- $\text{Max}_e E[U] = \alpha E[q] + E[w] - c(e)$
 $= \underline{\hspace{2cm}}$
- First-order condition:



Three Main Cases

$\alpha = 0$	$e = 0$
$\alpha = 1$	$e = 1 = e^*$
$0 < \alpha < 1$	$0 < e < 1$



Unless the agent is purely selfish, intrinsic motivation can provide incentives, even if pay is not tied to performance!

Reciprocity

- Conditional social preferences:
- If you are kind, I **reciprocate** by taking actions beneficial for you, even if I don't expect any material benefits for myself
- If you are unkind, I **reciprocate** by taking actions harmful for you, even if I don't expect any material benefits for myself



Reciprocity and Voluntary Co-Operation

- Optimal $e^*=1$
- When e cannot be verified, the agent's provision of e is voluntary.
- Participation constraint: $E[U]=a-c(e)\geq R=0$
 - $a = c(e) = 0.5e^2=0.5$
- **Principal offers to pay $a>0.5$ (say 0.75) and suggests action $e=1$.**

Reciprocal Agent

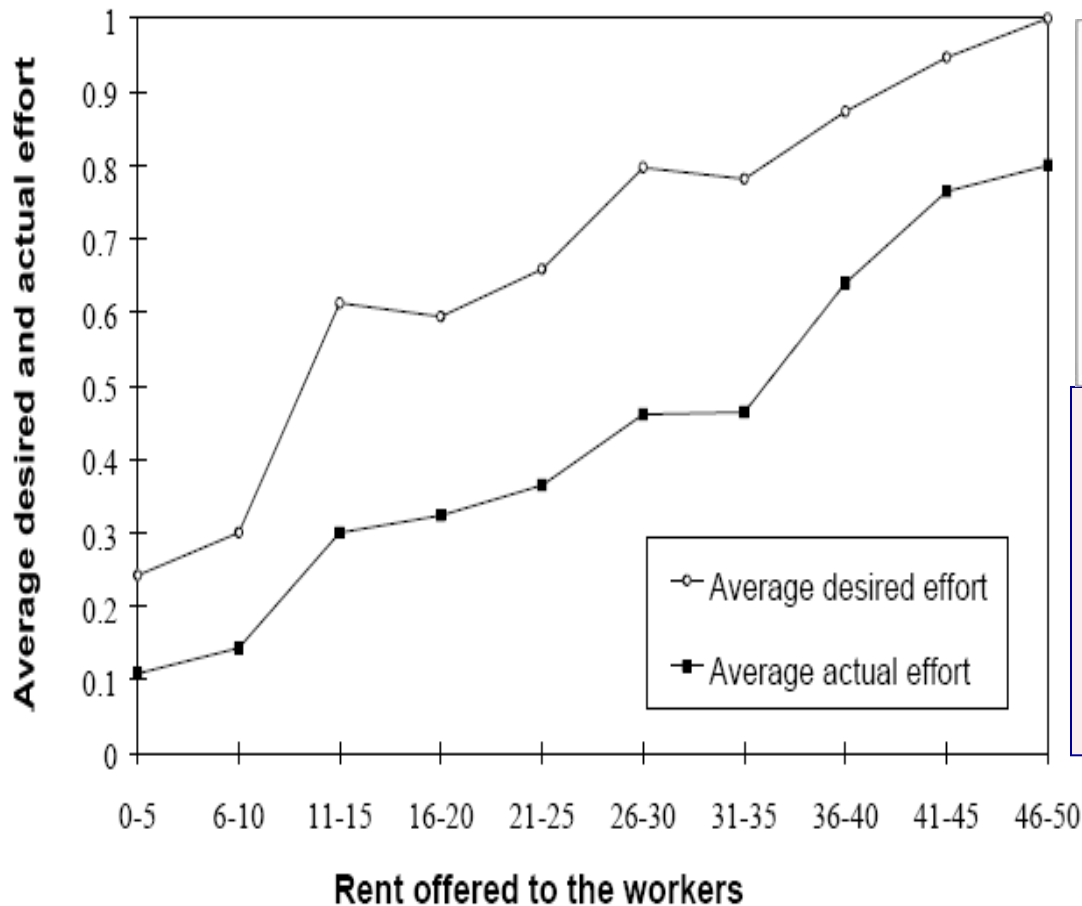
- The agent provides $e^*=1$
- The agent earns $a-c(e)=0.25>R$
- The principal earns $E[q-w]=0.25>S$

Selfish Agent

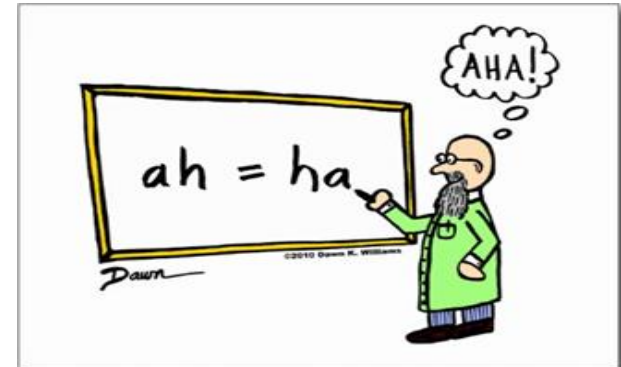
- The agent provides $e=0$
- The agent earns $a-c(e)=0.75>R$
- The principal earns $E[q-w]=-0.75<S$

Reciprocity works only when both principal and agent are reciprocal.
 In this case, the contract is sometimes called **the gift-exchange contract.**

Experimental Results



$$\text{Rent} = a - c(e) - R$$



- Evidence for existence of reciprocal agents: as rent \uparrow , actual effort \uparrow .
- Some agents are selfish (actual effort $<$ desired effort).

Bewley (1995, 1999)

- “...managers claim that workers have so many opportunities to take advantage of employers that it is not wise to depend on coercion and financial incentives alone as motivators.”
- “... other motivators are important as well, which have mainly to do with generosity.”

Management of Beliefs

- Belief dependence of co-operative behaviour
 - If I believe other agents will shirk, I will shirk as well

Management of Beliefs

- Choosing the right members of organization
- Change employees' preferences (loyalty)



Social Approval

- Social approval means that we are the object of other's admiration
- Anecdotal evidence:
 - approval of parents – teachers – peers
- “We are pleased to think we have rendered ourselves the natural objects of approbation, ... and we are mortified to reflect that we have justly merited the blame of those we live with.” *Adam Smith*
- “People's behaviour can largely be explained in terms of two dominant interests: economic gain and social acceptance.”
John Harsanyi

Behavioral Relevance of Social Approval

- Moffitt (1983)
 - 30-60% of citizens eligible for welfare don't apply

Public Good Experiment

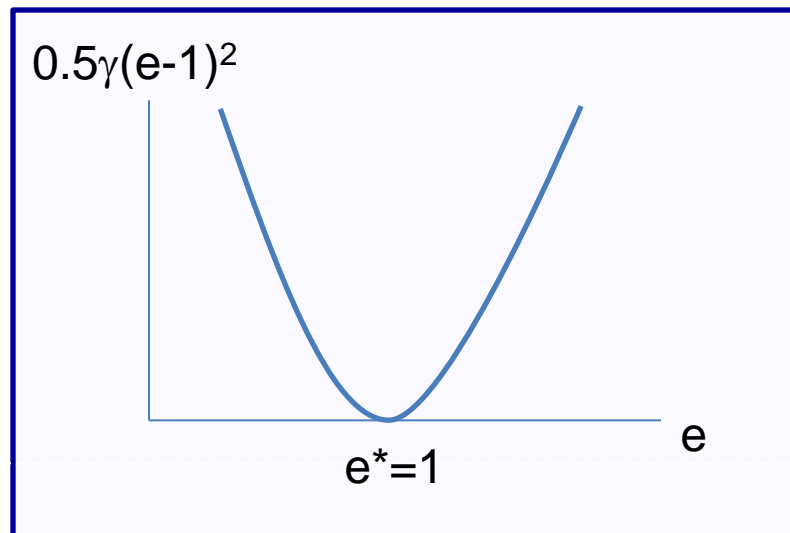
- Ten people
- Giving \$1 to the group increases welfare of each by 20c
- Two types of experiments:
 - Experiment 1: Identity of contributor anonymous
 - Experiment 2: Identity of contributor known by all

Contribution:

- 34% in Experiment 1, 68% in Experiment 2

Example: Social Norms

- Suppose that the agent feels guilty if he deviates from the social norm
- $E[U] = E[w] - c(e) - 0.5\gamma(e-1)^2$
- $\gamma > 0$ is the 'guilt' parameter
- The 'guilt' function penalizes the agent whenever he deviates from the first-best action $e^*=1$





Efficiency and Social Norms

- $\text{Max}_e E[U] = E[w] - c(e) - 0.5\gamma(e-1)^2$
 $= a - 0.5e^2 - 0.5\gamma(e-1)^2$
- First-order condition: _____
- $e =$ _____
- Social norms can induce the agent to provide effort, even if pay is not tied to performance!

Relation between Types of Incentives

- The strength of non-financial incentives may depend on whether the agent's pay is tied to outcomes

- Examples:
 - $\alpha'(b) < 0$
 - The agent feels less motivated if the principal explicitly signals to the agent that he cares mainly about the outcome
 - $\gamma'(b) < 0$
 - The agent may feel less guilty if he thinks that the principal cares only about the outcome – social disapproval is smaller if you cheat on a selfish boss



Crowding Out of Non-Financial Incentives

- $\text{Max}_e E[U] = \alpha E[q] + E[w] - c(e)$
 $= \alpha e + a + be - 0.5e^2$
- First-order condition: _____
 - $e =$ _____
- Suppose $b=1$ and $\alpha=-b$ for $b>0$
 - Then, $e=0$, even though b is set optimally when we consider only the financial incentives! This is known as **the crowding out effect**.

Application: Fines in Kindergartens

- Gneezy and Rustichini (2000a)
- Introduction of fine for picking up kids late

“As you all know, the official closing time of the day-care center is 16:00 every day. Since some parents have been coming late, we have decided to impose a fine on parents who come late to pick up their children. As of next Sunday a fine of \$10 will be charged every time collected after 16:10. The fine will be calculated monthly, and it is to be paid with the regular monthly payment.”

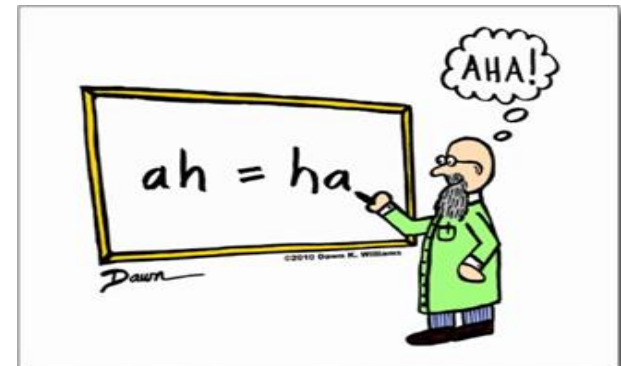
Experimental Results

Experiment

- Lasted for 20 weeks
- First 4 weeks: no fine
- Weeks 4-16: fine
- Weeks 17-20: no fine

Results

- Lateness increased after week 4!
- Lateness remained higher after week 16!



Financial incentives may crowd out non-financial incentives!

Application: Voluntary Work

- Gneezy and Rustichini (2000b)
- Provide incentive to high-school children to collect donations for various charities

Experiment

- Baseline case: no monetary compensation
- Treatment: children can keep 1% of donations



Results

- Treatment reduced collected donations by 36 percent!

Main Points

1. Power of Non-Financial Incentives: Non-financial incentives can improve performance even if pay is not tied to performance. Examples of non-financial incentives include intrinsic motivation, reciprocity, and social approval.
2. Crowding Out: The explicit financial incentives may sometimes crowd out the impact of non-financial incentives and produce worse results than in the case of no financial incentives at all.