Principal-agent dynamics

David Zetland

Global Challenges: Prosperity
LUC ~ 15 Feb 2016
Applied theory!

Observation: Some of you have a hard time ignoring your phones

Observation: When one of you looks, another is tempted

Suggestion: Let’s put phones away for our collective good, but...

Twist: Give the phone to the person on your left

How topical! Now let’s talk about principals and agents!
Prerequisite: Let’s think about types

https://www.youtube.com/watch?v=i9pZ0zIHypQ
Prerequisite: Let’s think about information

Let’s play “telephone” (“Chinese whispers”)
A principal hires an agent, who may (or may not) deliver benefits.

Overview:

- Asymmetric information
- “Types” of people
- Principal Agent (PA) relationship
- Quiz (3 questions)
- Applied to international aid
- Solutions to PA dilemmas?
- Relating PA to collective action dilemmas
Definitions: Asymmetric information

**Adverse selection:** Unobserved “type” (Golden Balls)

**Moral hazard:** Unobserved “action” (Whispers)

Insurance companies invented these terms to understand risk, i.e.,

Adverse selection, i.e., high risk types buy insurance.
Moral hazard, i.e., insured people take greater risks.

A young man (AS) with speeding tickets (MH) pays more for car insurance than an old lady with decades of safe driving.
Definitions: Types of people

AS and MH describe the problems; other words describe their origin.

In CA games, we describe the types of participants:

- **Cooperator:** Contributes to the group, unconditionally
- **Defector:** “Free rides” on the group, unconditionally
- **Reciprocator:** Decides what to do, based on others’ actions

Repeated PA (like repeated prisoner’s dilemma) reveals type to both principal and agent. Incentives can change (revealed) type . . .
Definitions: Motivations

Types do not determine outcomes. External incentives also matter.

Intrinsic motivation affects our behavior “from inside”
Extrinsic motivation affects our behavior “from outside”

Examples: Why don’t we litter? Why don’t we take people’s things? Why do we work long hours?

Intrinsic motivation is similar to guilt (or “other-regarding preferences”).

It can change, and it’s complemented by social (informal) and official (formal) extrinsic motivators
Collective action structures produce value (win-win) via cooperation. Free riding, which depends on asymmetric information, can weaken CA.

- Free riders hide their incompetent type (AS)
- Free riders hide their wrong actions (MH)

Examples? How about group projects or the commons room?

Both AS and MH can be reduced through intrinsic or extrinsic motivation problem.

Q: Who’s the FR in a PA problem?
What is a principal-agent relationship?

A combination of transaction and relationship in which the principal trusts the agent to carry out a task on their behalf, usually because the agent is capable of doing a better job.

In most circumstances, both are better off, i.e., trading money for expertise.

Your examples?

- Parents hire teachers for their children
- Car owners hire a mechanic to fix their car
- Home buyers hire an estate agent to find a deal

The best agents have strong intrinsic motivation.
A useful agent
PA failures

But some PA relations fail, i.e., when principal pays for poor results (cost $>\,$ benefit)

Examples of problems with adverse selection or moral hazard:

- Teachers impose own ideas or take long breaks
- Mechanic doesn’t know your bike or breaks working parts
- Estate agent doesn’t know market or recommends a lemon

What about politicians? Do we always choose the qualified one? Does the one we choose always work hard for us? Your thoughts?
Not dead white male 1

These ladies fought against agents who failed us.

“The ciudades tienen la capacidad de proveer algo para cada uno de sus habitantes, sólo porque, y sólo cuando, son creadas para todos”

Jane Jacobs

*The Death and Life of Great American Cities* (1961)
Not dead white male 2

The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction.”

—Rachel Carson

*Silent Spring* (1962)
Three questions

The WDR was an interesting self-critique...

Questions:

1. What action would you recommend to overcome development professionals’ biased perspectives on life in the countries they are “helping”? 
2. Give one reason why development professionals might “throw good money after bad.”
3. Who felt they had more control over their own future — the poor or development professionals?
Break!

http://e.ggtimer.com
YOUR three answers?

1. They should visit the country they are helping and experience the results of their intervention.
2. Ego (big budget), fear (cover mistake), ignorance (not thinking of opportunity costs)
One more time: AS and MH

Adverse Selection: Principal harmed by picking unqualified agent (i.e., agent’s ability)

Moral Hazard: Principal harmed by agent’s defecting action (i.e., agent’s choice)

In both cases, the principal suffers from asymmetric information.

Let’s look at an example from my paper...
Save the poor, shoot some bankers (see BB)

I break AS into *knowledge* and *care* to explain observed facts:

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>High care</th>
<th>Low care</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Experienced aid worker</td>
<td>Corrupt local official</td>
</tr>
<tr>
<td>Low</td>
<td>Enthusiastic volunteer</td>
<td>Bureaucrat on a junket</td>
</tr>
</tbody>
</table>

In the WDR, both low knowledge and care are problems. Note that this is not even addressing MH problems!
Now add confusion!

Who does what? Where did failure occur?

The quantity and quality of aid delivered depends on knowledge of middlemen and their care in acting and monitoring.
How to address PA problems? (1/2)

What are your ideas?

**Adverse Selection:**
- Get recommendations
- Hire “certified” or experienced people
- Do a small deal first

**Moral Hazard:**
- Monitor actions
- Profit- (or loss-) sharing
- Reduce discretion (e.g., fixed input-output ratios)
How to address PA problems? (2/2)

Both:

- Compare results across (chains of) agents (benchmarking)
- Empower recipients (changing them into principals)
- Lower payments (“the toughest job you’ll ever love”)

Higher payments? *The Economist* (30 Jan): “It might be that the risk of being caught in Ghana is so low that normal calculations of risk and reward do not apply. Perhaps a combination of higher pay, political leadership and stiff punishments would have stopped corruption: it did in Singapore, for example. But money alone is not enough. In Ghana, some are astonished that anybody could have believed that higher pay would have made cops less greedy.”
Collective action vs principal-agent

A CA problem is based on failed cooperation within a group of peers with informal discipline.

A PA problem is based on betrayal by a subordinate in a hierarchy with formal means of discipline.

The problems overlap in ways, e.g., Persson et al., my paper, and elsewhere:
Examples.

*The Economist* (13 Feb edition):

“Fears grew of a new humanitarian catastrophe in Syria, as forces loyal to Bashar al-Assad, backed by heavy Russian bombing, came close to encircling Aleppo, where 300,000 people are in danger of being cut off and starved. UN investigators accused the Syrian government of a crime against humanity, after a report found that detainees are being killed on a massive scale, amounting to a state policy of civilian extermination.”

“Anabel Flores Salazar, a crime reporter for a newspaper in the Mexican state of Veracruz, was kidnapped from her home by at least eight uniformed men and murdered. Her body was found on a road in the neighbouring state of Puebla. Six journalists who lived or worked in Veracruz have been killed since 2011.”

Which is PA and which CA?
Overlapping CA and PA problems

“Who (CA) watches the watchers (PA)?”

A citizens committee (CA) represents everyone in a challenge to a corrupt agent (PA)

A delegated representative (PA) can call for reform of a local committee

Example: “Professor Who Helped Expose Crisis in Flint (PA) Says Public Science (CA) Is Broken” at http://chronicle.com/article/The-Water-Next-Time-Professor/235136/
Exercise (*stop at 11:45*)

“Identify a situation (or a case) where cooperation between people is desirable but problematic and apply *either* the collective action *or* principal-agency framework to this case to explain the cooperation problems.

Tell your neighbor three essential steps for this assignment:

1. Identify a situation where cooperation is desirable but problematic.
2. Ensure that problem results from a PA or CA dynamic, i.e., where the asymmetric information on split of costs and benefits makes “cooperation difficult.”
3. Use either a PA or CA framework to explain the problem.
What saves you from free riders?
What makes agents eager to prove their honestly?
What brings you constant pleasures and freedoms?
What rewards your talents?

Markets!¹

...but wait... one more example!

¹Don’t worry, there’s still some role for government and/or community
Last Balls

https://www.youtube.com/watch?v=6_BhAuVBWFg&feature=youtu.be&t=2m1s
Now give those phones back!