

Job market signaling

Key features:

- ▶ **Information asymmetry:** Employers don't know workers' abilities
- ▶ **Misalignment of interests:** Employers want to pay as little as possible, workers wants as much as possible
- ▶ Possibility of signaling: *education* in the model
 - ▶ Of no direct benefit to workers or employers
 - ▶ Costly, especially for **less** productive workers

Spence (1973) shows that there may be an equilibrium in which education acts as a **costly signal**:

- ▶ employers pay more for more educated workers;
- ▶ more productive workers get more education.

Even though education is totally unproductive in the model!

Job market signaling: simple formal treatment

Suppose unlimited pool of two kinds of workers:

- ▶ Group 1 has productivity of 1 and marginal cost of education 1 (i.e. total cost of getting education level E is E)
- ▶ Group 2 has productivity of 2 and marginal cost of education $1/2$ (i.e. total cost of getting education level E is $E/2$)

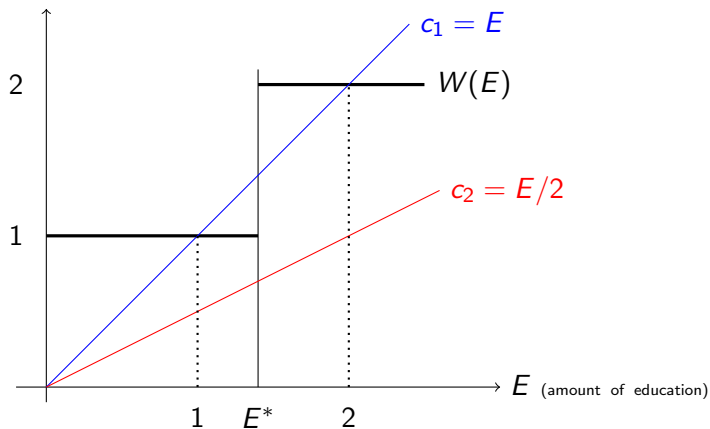
Suppose the employer pays workers what she expects them to produce, conditional on their education.† Then this is an equilibrium:

- ▶ For some $E^* \in (1, 2)$, workers with education $E \geq E^*$ get paid 2 and those with $E < E^*$ get paid 1
- ▶ Group 1 gets $E = 0$
- ▶ Group 2 gets $E = E^*$

† Implies that workers have all the bargaining power.

Job market signaling: graphical treatment

\$ (wages/cost of education)

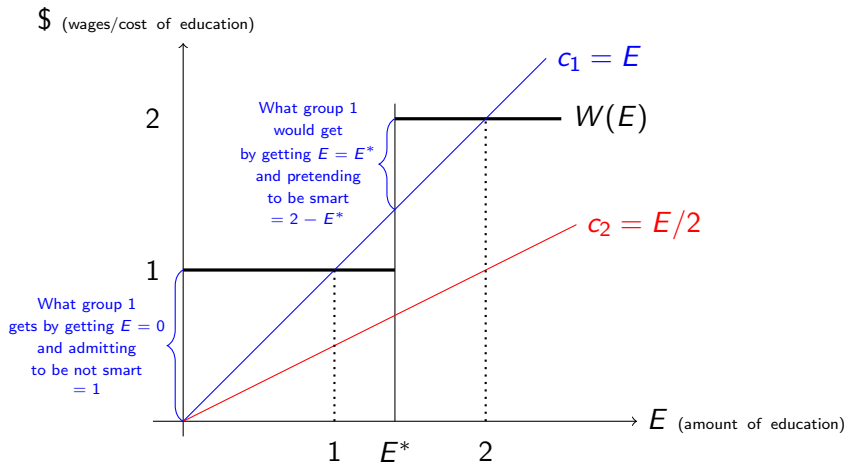


c_i : cost of education for group i

$W(E)$: wages as a function of education level

Job market signaling: graphical treatment (2)

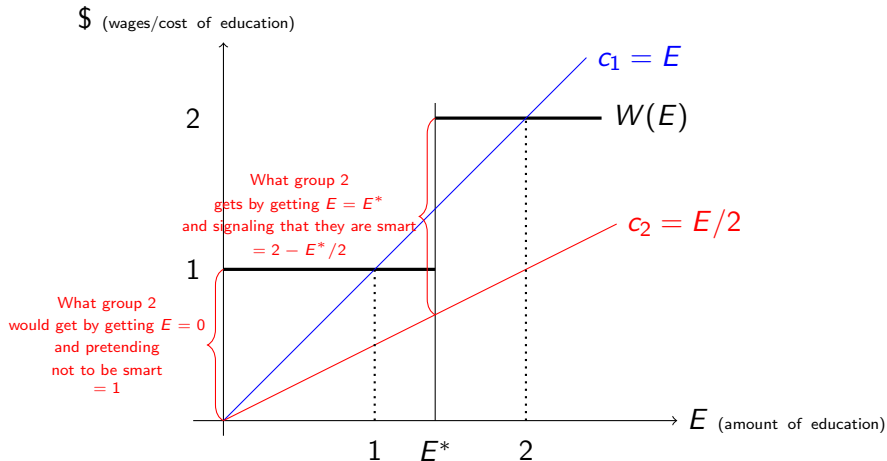
Is this an equilibrium? Does group 1 want to get $E = 0$?



Group 1 wants to get $E = 0$ rather than $E = E^*$ because $1 > 2 - E^*$.

Job market signaling: graphical treatment (3)

Is this an equilibrium? Does group 2 want to get $E = E^*$?



Group 2 wants to get $E = E^*$ rather than $E = 0$ because $2 - E^*/2 > 1$.

Key insight from signaling model

When there is information asymmetry (hidden types) and incentives to lie, the informed party can communicate through observable actions if

- ▶ the action is costly
- ▶ the cost depends on the hidden information
- ▶ incentives are such that the types “separate”: “high types” do a lot of the action, “low types” do a little, etc.

Does this help us to explain why education is valuable to employers?
What else might it help us to explain?

Antelopes jumping (“pronking”, “stotting”)



Sender	Receiver	Hidden info	Signaling device	If signal is successful, receiver thinks ...
Antelope	Lion	Antelope's speed, fitness	Jumping	“Only a very strong and fast gazelle can (afford to) do that; I won't bother chasing him.”
Antelope	Potential mate	Antelope's survival fitness	Jumping	“Only a very strong and fast gazelle can (afford to) do that; I will mate with him.”

Yakuza tattoos



Sender	Receiver	Hidden info	Signaling device	If signal is successful, receiver thinks:
Aspiring gangster	Gang leader	Applicant's potential value as a gangster	Getting tattoos	"Only someone who is confident that he will be a successful gangster would make such an irreversible commitment to the underworld. I will promote him."
Gangster	Citizen	Gangster's willingness to use violence	Having a tattoo	"Only someone who is willing to use violence would make such an irreversible commitment to the underworld. I will believe his threats."

Gambetta, *Codes of the Underworld: How Criminals Communicate*, 2011.

Advertising campaigns



Sender	Receiver	Hidden info	Signaling device	If signal is successful, receiver thinks:
Producer	Consumer	Quality of product	Expensive advertising campaign	"This advertising campaign would only be worthwhile for a seller whose product is so good that consumers who buy it once continue to buy it (or tell others to buy it). I'll buy the product."

Milgrom and Roberts, "Price and Advertising Signals of Product Quality, *Journal of Political Economy*, 1986.

Gordon and Hafer (2005): Political spending as muscle-flexing

Different ideas of why interest groups contribute to politicians, hire lobbyists:

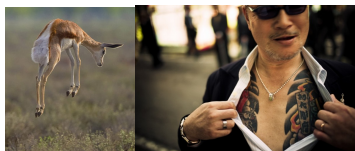
- ▶ Influence/bribery (implicitly, week 12 – collective action)
- ▶ Legislative subsidy (Hall and Deardorff (2006), week 14 – money in politics)
- ▶ Policy information/persuasion

See references in Hall and Deardorff (2006).

Each implies some predictions about where you would expect more or less lobbying (See week 14 lecture for one framework).

What about lobbying (or more generally, political spending) as a signal?

Gordon and Hafer (2005): Political spending as muscle-flexing (2)



Sender	Receiver	Hidden info	Signaling device	If signal is successful, receiver thinks:
Firm	Regulator	Cost to the firm of following the rules \implies firm's willingness to fight	Hiring lobbyists, making campaign contributions	"Only a firm that is very willing to fight against us would it spend so much on lobbyists and contributions. I will not regulate it closely."

Very similar logic in dealing with another firm: spend on lobbyists and contributions in order to signal "resolve".

Gordon and Hafer (2005): Political spending as muscle-flexing (3)

Evidence from regulation of nuclear plants in the US (Gordon and Hafer, 2005):

- ▶ Firms that paid the most in contributions were investigated the least
- ▶ Effect of contributions on investigations was large enough that “high cost” types would pay it but not “low cost” types (i.e. a separating equilibrium is plausible)
- ▶ Some evidence that when violations are public (and thus investigations become mandatory) expenditures decrease

Q: Which of these are consistent with political spending as bribery?

International crisis bargaining and signaling

We have incomplete information, misalignment of incentives. What about **signaling**?

States often use costly signals of resolve.

Signaling device	If signal is successful, receiver thinks:
Mobilize troops	"Because mobilizing troops is costly, my adversary must have high resolve."
Make public statements of intention to fight	"Because my adversary's promises would be costly if he backs down, he must have high resolve."
Place forces in disputed area, or take other risky actions	"Because my adversary is willing to increase the risk of a war, he must have high resolve."

By **high resolve**, we mean a low cost of fighting and/or a high probability of winning.
i.e. it is information about p , c_A and c_B in the model above.

Signaling and war

But note that signals of resolve (mobilizing troops, making public statements of intention to fight, placing forces in disputed area) also affect incentives – they make war more likely!

We thus see that incomplete information can cause war both directly, through miscalculation, and indirectly, by forcing states to communicate their resolve in ways that can foreclose successful bargaining. (Frieden et al, 104)

Implications

War more likely when military and political situations are less transparent.

What affects transparency?

- ▶ Technology (e.g. satellites)
- ▶ International weapons inspections regimes
- ▶ Government features:
 - ▶ Access to information about military capabilities
 - ▶ Clarity of political processes: what costs do leaders face for backing down from threats, from fighting a war, etc.

Democracy and conflict: some evidence

Schultz (1999) contrasts two views of democracy's effect on bargaining and conflict:

- ▶ **Informational view:** democracies are more transparent and have better tools to signal their resolve \implies other states **less** likely to resist when challenged by a democracy than by an autocracy.
- ▶ **Constraints view:** democratic leaders incur greater costs from fighting wars \implies other states **more** likely to resist when challenged by a democracy than by an autocracy.

Shows, in analysis of wars 1816-1980, evidence for the informational view: when democracies make threats, the other side tends to take those threats seriously (more so than when autocracies make threats).

Signaling in mass movements, Lohmann 1994

Generalizing from the simple “sender-receiver” setup, think of all citizens possessing private information about the regime.

They cannot directly communicate that information, but they can take costly political actions (e.g. participate in a demonstration).

Citizens observe the number of participants, revise their beliefs about the regime, and decide whether to take costly political actions themselves.

⇒ protest movements can grow because of the spread of information about the regime (i.e. **information cascade**).

Key point: It is the participation of *moderates* that communicates the most information: if moderates are participating, the regime must be quite bad.

Signaling in mass movements (2)

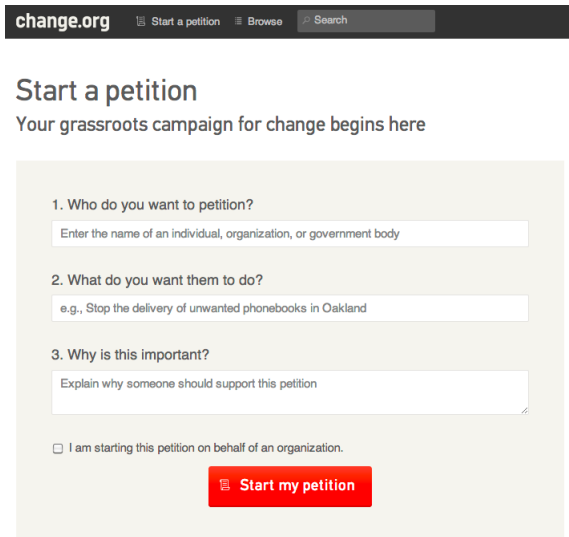
Kricheli et al (2011) offer a variation on the same idea. (Protest conveys information not about the regime, but about other citizens' preferences toward the regime.)

The protest's information-revealing potential is maximized when it is very costly for citizens to signal their opposition to the regime. (pg. 6)

They provide evidence that, when they happen, protests are most likely to cause regime change in the **most repressive** regimes.

Signaling in mass movements (3)

Question: What is accomplished by making protest cheaper?



The screenshot shows the top navigation bar of change.org with the logo and links for 'Start a petition', 'Browse', and 'Search'. Below the navigation is the heading 'Start a petition' and the sub-heading 'Your grassroots campaign for change begins here'. The main content area contains a form with three numbered steps: 1. 'Who do you want to petition?' with a text input field containing 'Enter the name of an individual, organization, or government body'; 2. 'What do you want them to do?' with a text input field containing 'e.g., Stop the delivery of unwanted phonebooks in Oakland'; 3. 'Why is this important?' with a larger text input field containing 'Explain why someone should support this petition'. At the bottom of the form is a checkbox labeled 'I am starting this petition on behalf of an organization.' and a prominent red button labeled 'Start my petition'.

change.org Start a petition Browse Search

Start a petition

Your grassroots campaign for change begins here

1. Who do you want to petition?
Enter the name of an individual, organization, or government body
2. What do you want them to do?
e.g., Stop the delivery of unwanted phonebooks in Oakland
3. Why is this important?
Explain why someone should support this petition

I am starting this petition on behalf of an organization.

[Start my petition](#)