

In spite of the Akerlof's lemons problem,
Used car markets and life, health, automobile
insurance markets exist!

Why?

- The State can operate to solve the failure: the automobile insurance is compulsory for car owners.

- Often the not informed side of the transaction does something to induce the other side to reveal his quality.

In insurance:

- medical checkup are often required;
- “benefits are greatly reduced for the first two years: the buyers of “bad quality” will not buy the insurance policy

- **Reputation:**

With used cars the seller may get the car checked by an independent mechanic. In this case the mechanic to save his reputation will reveal the true quality of the car.

- NOTE that in this last case, it is the seller (the more informed side of the transaction) that does something that indicates the quality of the car being sold.

Very often, in situation of asymmetric information the informed individuals would improve their situation revealing their information to the other (not informed) party.

Think to:

- The owner of a good used car;
- A potential worker of high ability;
- A firm that has produced a new product highly performant and with high environmental benefits

BUT

It is difficult to find a simple and straight way to reveal such “hidden information”.

It is easy to assert:

- “you have to employ me, since I’m creative, productive, clever...I’m so cool!!!!”

Or:

- Buy my new product “Splash”, since it is the best you could ever find!

Such statements might be easily asserted both by honest people and by liars

HENCE:

- The side of the transaction which has greater information and which is characterized by high quality of its goods or services, wants to give (produce) a **SIGNAL** that distinguishes itself from whom is offering “low quality”.
- The less informed side of the transaction has an incentive to find a way that leads the informed side to ***SELF-SELECT*** as having a good/service that is of high or low quality.

SPENCE'S JOB MARKET SIGNALING MODEL

- Michael Spence (1973). "Job Market Signaling". *Quarterly Journal of Economics*, **87** (3): 355–374.

Economic theory has provided two points of view on the acquisition of education by individuals:

1. The first approach, the “**human capital theory**”

- ((Gary S. Becker (1993, ed.). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago, University of Chicago Press.)),
- individuals acquire education up to the point where:

$$MC(\text{education})=MB(\text{education})$$

Cost of acquiring education = direct cost +
indirect cost (opportunity cost)

Benefit of education = the prospect of higher remuneration you can get on the labor market.

=> implicit assumption that a more educated worker is more productive from the point of view of the firm, which is hence disposed to recognize higher wages at higher marginal productive contributions by the single.

The empirical test of this approach is based on the finding of a positive correlation between the number of years of education and the wages of workers (returns to schooling).

2. The second approach, «theory of the signals»

Individuals are different in terms of individual abilities, and education is a (indirect) signal of their quality (Spence, 1973).

In particular, if,

- in the presence of asymmetric information,
- If the agents' ability is known only by who is seeking a job, and there is no direct and believable way to communicate their skills to the firm, which is hiring,
- more skilled individuals will seek indirect forms for signaling their abilities to the firm

- If the acquisition of education is easier (in terms of effort required to acquire a certain degree) for individuals of higher ability,
- it will be convenient for them to acquire higher degree
- to signal their greater ability to the firm, and hence to obtain a higher salary.

- it will be convenient for the firm to link wages to the educational degree since it will (probabilistically) get greater levels of productivity by individuals with higher degree (who probably are the ones with higher abilities).

=> education is a signal.

- The signal may be defined as
- some activity or decision that demonstrates that the agent who undertakes it has certain skills or characteristics
- the agent is considered to belong to a certain subset of the entire population.

Job market is characterized by asymmetry of information.

In the model:

- the not informed agent (the employer)
- attempts to discriminate the market (*screening*)
- leading the informed agents (the employees) to *self-select*
- on the basis of a *signal* of quality (signaling).

- A firm wants to hire a number of workers,
- but it is not able to identify ex-ante, among the many candidates,
 - the workers of "good quality"

- The potential workers may not always have their own reputation
- the firm has real problems in distinguishing more productive and reliable workers from those less productive and reliable

To solve this problem of imperfect information, the firm may decide to rely on a **signal**.

- the signal must be a characteristic of the candidates
- observable by the firm,
- and that allows the firm to attribute to each worker the status of "high productive" employee or "low productive" employee.

- the firm may decide ex-ante:
- to consider "high productive" candidates the ones characterized by a high level of education, and
- to consider "low productive" candidates those who have not reached that level of education.

If the firm adopts this policy the contracts she will propose to the workers will consider:

- a higher salary for more educated workers

and

- a lower wage for less educated workers

- Assume that the firm actually considers the acquisition of a certain degree of education as a signal of productivity.
- Is the firm's strategy to discriminate the market through this signal actually an efficient strategy?
- Can the signal "*level of education*" correctly separate high-productive from low-productive workers?

What are the properties that a signal must exhibit to work out its function? (Discriminating – screening - the market in an efficient manner)

what would happen in the paradoxical case in which the firm decided to adopt as a *signal* of quality:

“to be membership of an association of workers with free registration”

⇒ this signal would not be effective.

⇒ all workers would choose to acquire the signal by joining the association,

⇒ The signal would not be efficient, since it wouldn't be able to discriminate the market.

First result:

- to be effective, a signal must be *expensive* for those who wish to acquire it.

- “**to be membership of an association of workers**” would still be an ineffective signal even if the entry had a **fee** to be paid,
in the case in which the fee is identical for workers of good and bad quality (and there is no reason to assume different fees for different qualities)

In this case, both types of workers face the same problem:

- if the fee is less than the higher salary they would get once associated (ie, once acquired the signal),
- both less productive workers and more productive workers would find convenient to pay the fee and become memberships of the association
- and the firm would still be unable to distinguish between the two groups.

second result:

- to be effective, a signal must not only be expensive, but it must be more expensive for a group than for the other group.
- The signal must be more expensive for the group of less productive workers, so as to discourage them to acquire it.
- Our goal is to identify an observable characteristic (*the signal*), that allows one to infer an unobservable one (*productivity*).
- The signal must be acquired only by those who actually possess the unobservable characteristic.
- The cost for the two groups must be different.

The level of education is a signal that actually has the two above properties.

1. Studying is expensive:

studying requires effort

2. If we believe that productivity at work is somehow related to intellectual ability and to the capacity to concentrate, we can reasonably assume that the acquisition of a given level of education is **more costly** for individuals characterized by low productivity.

In this context education is just a signal.

- The workers are characterized by high or low productivity, regardless of their education: they are of high or low innate ability and
- education does not increase their productivity.

The idea is extreme: if there were perfect information there would be no need for education

NOTE:

- The causality direction is not:
higher education → higher productivity
- but instead:
higher productivity → lower costs of acquiring
education → higher education

Problem:

- to specify the requirements of education asked by the firm.

Assume we could

- synthesize the educational curriculum of an agent in terms of "years of education".
- The firm has to fix a number of years of education beyond which a worker is automatically considered highly productive.
- a sort of threshold value for the education.

the definition of this threshold value is crucial for the signal to be effective

If the firm would fix that:

- after only two years of education a worker might be considered of high productivity and hence might earn higher wages,
- all workers, the most productive as well as the least productive, probably would acquire the signal.
- And the signal would not discriminate the market.

Instead, if the firm would fix that:

- a phd degree would be necessary to signal high-productivity workers
- probably, also very productive workers would actually give up to acquire the signal.

Also in this case the signal would not discriminate the market

- How is it possible then to fix a threshold value for the signal of quality (number of years of education),
- in order to induce more productive workers to actually study for those years, and to discourage less productive workers from doing the same?

If we identify a threshold value with these properties we define a

SEPARATING OR SCREENING EQUILIBRIUM

ie. a situation in which:

- who owns the signal (threshold value of the number of years of education) is considered highly productive;
- only for the more productive agents it is convenient to acquire the signal;
- the firm's belief that the acquisition of the signal is a test of the quality is confirmed by the facts.