MANAGERIAL ECONOMICS

Corrado Pasquali

3. INTRODUCTION TO INCENTIVES AND THE FRAMING OF DECISIONS

David Kreps definition of management

Management is about having other people freely choose what you want them to choose. How to have them pursue your utility while they pursue theirs.

Tools for that goal

- → Incentives or how to have people work harder than they would otherwise do
- → Signals or how to have people reveal who they really are and how productive they are
- → Threats or how to credibly scare people
- → Reputation or how to use other people' past history and make it count
- → Strategy or how to forecast other people' actions and reply to them.

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Broken glass?
We'll fix it **fast**

Schedule online today

Let's get started

The best choice for auto glass repair

Safelite® Glass Corp.

- Columbus, OH
- Founded in 1947
- They repair/replace windshields on demand
- Largest firm in the US market

Safelite® Glass Corp.

- Hourly based wages

Safelite® Glass Corp.

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  - hidden action

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Safelite® Glass Corp.

- Hourly based wages
  - hidden action
  - misaligned incentives
  - long time, long trips to get on site
  - less than optimal effort
- In the 90's: productivity is largely below than expected

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- Adoption of a different wage determination system: Performance Pay and Productivity.
- Wage as a function of the number of worked windshields.
- Weekly wage **P** thus corresponds to the sum of worked windshields.

PLUS:

- A "threshold", minimum, fixed wage is establishhed. Let this be **H**
- And the following rule is adopted: if $\mathbf{P} < \mathbf{H}$ then $w = \mathbf{H}$

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Thus, if we let w stand for wage, we have:

- $P < H \rightarrow w = H$
- $P > H \rightarrow w = P$

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Key point: head management has set a menu that workers can choose from:

- try to enter the **P** zone: work harder, earn more
- stay in the **H** zone: work less earn less

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Matter of fact, a 44% increase in productivity is observed.

What does this increase stem on?

- A fraction of workers work harder to get to **P**?
- Workers would stick to **H** but they fear being confronted with **P**-workers and thus fear being fired
- Less motivated or fixed-wage-loving workers leave Safelite and they get substituted by more motivated and eager to earn workers.

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As to head management:

- They have to set a piece rate **P**
- They have to set the fixed wage **H**

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- A first group in the head management maintains that **H** should be fixed at a lower level than that in place before the adoption of the piece rate system. Say, 70%
- A second group maintains that there is no need to set a lower **H**

The first group is right!

- With an unchanged **H**, no worker will ever earn less and the wage bill could only stay constant or even get bigger.

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The second group is right!

- The key point is setting **P**, not **H**!!!

See how it works with an example.

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Let us suppose that:

- Workers were paid \$12 per hour for a 40 hours working week
- We would have a gross pay of $\$12x40h = \$480$ per week.

Let us also suppose that:

- Workers do nothing but fixing windshields
- 10 windshileds per week are worked.

We would have: $ULC = \$48$ per windshield.

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Suppose that:

- Workload for Safelite is 5.000 windshields per week
- Workers, as said, work 10 windshields per week.

Then, Safelite:

- needs to employ 500 workers
- wage bill would equal $500x\$480 = \$240.000$ (plus taxes)

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Suppose now that a PPP wage system is adopted.

- Safelite sets the piecerate at \$30 per worked windshield.

What is going to happen?

- Some workers might decide to work harder to earn more
- Matter of fact: to receive more than \$480 (i.e. the guaranteed wage rate) one has to work at least 16 windshields per weeek (i.e. $16x30 = 480$)

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Suppose now that 100 workers would aim at **P** and work 20 windshields per week.

- They will get $w = \$30x20 = \$600$
- The remaining workers will stick to $w = \$480$ and to 10 windshields per week.

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Point is: of the total 5.000 windshields (i.e. Safelite's workload)

- 2.000 will be worked by the hhard working technicians
- the remaining 3.000 will be left to the "lazier" ones

At 10 windshields per week, Safelite will only need 300 less productive technicians

Let us calculate the wage bill:

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The new wage bill:

$$100x\$600 + 300x\$480 = \$204.000$$

The old wage bill:

$$500x\$480 = \$240.000$$

ULC for the hard workers:

$$\$600/20w.s. = \$30$$

ULC for the lazy workers:

$$\$480/10w.s. = \$48$$

. . . but you now need only 300 of them for a total work force of 400 people.

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- This shows that Safelite could keep the guarantee at 100% of the old wage rate and improve its bottom line.
- So: let employees choose hoow hard to work and have them rewarded the more they make choices that benefit your firm.

Management

- Let other people freely choose what you want them to choose
- Have others maximizing your own utility while they maximize theirs
- Management is first and foremost about getting things done by the effort of others.

Some questions

A medley of questions:

- How would you define “lazy”?

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A medley of questions:

- How would you define "lazy"?
- Who is better off with "more productivity"?
- Is "reacting to incentives" costly?
- Is "incentivizing" costly?
- Are incentives always worth using?

Some more questions

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- Is "number of worked windshields" a good measure of effort?
- what is "number of worked windshields" a proxy for?
- What else should Safelite do in order to have more workers aiming at **P**?
- What would ever guide you in deciding whether to aim at **P** or not?

And now to dating apps: cupid.com

Picking up guys

In trying not to be sexist, I will talk about a girl trying to pick guys up (might as well be a guy picking up guys or a girl picking up girls).

- A girl walks into a bar , she approaches the first guy she sees and offers to pay him a drink;
- He turns her down.
- She keeps trying with other guys in the bar.
- Guys in the bar soon realize what she's up to and they all turn her down.

Picking up guys

- The girl is now hopeless and she decide to leave the bar and enter the Internet.
- She decides to join www.cupid.com (an online dating app)
- She however sticks to her former technique and she keeps being turned down again and again. She is now in trouble.
- Cupid.com is in trouble too, though...
- ...Guys are flooded with girls' offers for dates, they get turned off and they quit...
- ...but if guys quit, then girls quit as well...
- ...and cupid.com looses billions of dollars.

Solution: call an economist!

- At Cupid, they are smart enough to realize that they'd better have an economist solve the problem!
- They actually call two: Muriel Niederle of Stanford and Dan Ariel of Duke.
- They soon realize that the problem is to be found in one of the most fundamental notion in economic theory: scarcity.

Induce an artificial scarcity: that's the solution!

- Here is how it goes: have a sharp limit set on the number of date offers that girls could make to guys each month.
- Once you do this, girls will take their offers seriously, they won't just look at guys' pictures and rather look at their profiles too.
- So, guys will know this very fact and will be more likely to accept girls' proposals.

Induce an artificial scarcity: that's the solution!

- The two economists, got the solution right!
- Cupid.com has flourished and the online dating is now a $2 billion industry in the US alone.

Let's move to an Israel' kindergarden

The Kindergarden

- Suppose you are the manager of a day-care center for young children.
- The center is scheduled to operate every day until four in the afternoon, when the parents are supposed to come and collect their children.
- Quite frequently parents arrive late, and force you to stay after working hours.

- You have considered a few alternatives in order to reduce the frequency of this behavior.
- A natural option is to introduce a fine: every time a parent comes late, she will have to pay a fine.
- Will that reduce the number of parents who come late?

Aldo Rustichini and Uri Gneezy field study

- They studied the effect of fines on the frequency with which parents arrive late to collect their child from day-care centers.
- Data include observations of 10 day-care centers over a period of 20 weeks.
- In the first 4 weeks they simply observed the number of parents who arrived late.
- At the beginning of the fifth week they introduced a fine in six of the 10 day-care centers.
- The fine was imposed on parents who arrived more than 10 minutes late.
- No fine was introduced in the four other day-care centers, which served as a control group.

...next slide shows what happened...

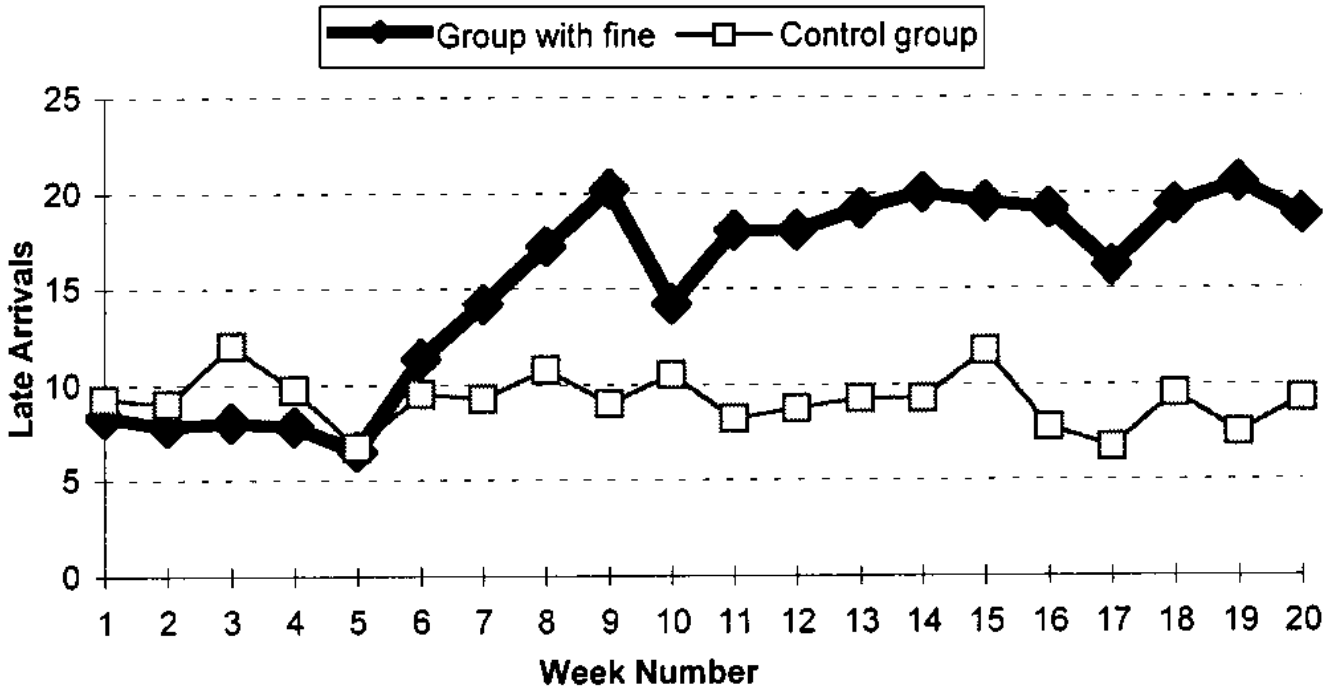

FIGURE 1. — Average number of late-coming parents, per week

Main findings

- After the introduction of the fine we observed a steady increase in the number of parents coming late.
- At the end of an adjustment period that lasted 2-3 weeks, the number of late-coming parents remained stable, at a rate higher than in the no-fine period.

The following material on Priceline.com and Google ads has not been covered nor discussed in class.

You can either read it or skip it and proceed to the next section "Wrap Up 1".

And now to booking apps: priceline.com

Priceline.com

- Priceline.com is an on line booking service/app.
- Key to their success: "name your price"
- The idea is: you actually have the chance to fix your travel's price (i.e. flight, hotel, car rental...)

Name your price

- The key to the "name your price" strategy alone is not the key to success.
- After all, if one could fix his/her price he /she would always fix it to zero or one at a maximum...
- ...and no hotel or airline would ever accept the price.

Name your price

- Key to Priceline success: *conditional price offer*
- If you bid a specific price and Priceline decides to accept it, then you are bound to pay that price
- What is the main ingredient of this policy? What is it exactly?
- By the way, conditional price offer comes from Jay Walker's mind (you guess his job. . .)
- Note well: conditional price offer actually revolutionized the travel industry (it's big bucks!)

And now to Google ads

Google ads

- Google collects around $50 billions a year from advertisers (those links/sites that appear first on your google searches with an "adv" label)
- The story goes that while in its infancy, Google literally walked door to door trying to get them to place for an ad next to a search term.
- . . . likely not going to scale up as the number of Google searches exploded.

Google ads

- The solution came from two engineers: Eric Veach and Salar Kamangar
- They immediately thought about auctions. There was a problem, though: potential advertisers would start by bidding a very low price and then incrementally raise it bit by bit.
- Result: auctions might last forever and, as searches were going on at the same time, the whole site would crash.

Auctions! Second price auctions!

- The winner pays a price that is \$0.1 more than the second highest bid.
- The whole thing is a bit complicated but the very fact is that second price auctions reduce the risk of over-spending (winner's curse), cut auctions off and greatly simpify the whole process.
- Guess what: second price auction were introduced and mathematically analyzed by another economist: William Vickrey (by the way, this got him a Nobel prize in economics).