MANAGERIAL ECONOMICS

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12. THE ECONOMICS OF EMPLOYMENT RELATIONSHIPS

The economics of employment relationships

Consider the following points:

1. Long term employment is an ongoing relationship whose exact terms of trade are determined only as time passes
2. In place of a detailed agreement about how the relationship will evolve, the job comes with a process by which its evolution - i.e. its *what's next* - is determined;
3. Once the relationship has begun - and increasingly as time passes - the employee has assets at risk (can this be a hold-up?)
4. The last item works for an employer as well (human capital, training ...)

The economics of employment relationships

This is the reason why "supply equals demand" does not work in our case: it is simply not the adequate model.
What drives "supply equals demand" is the fact that every market participant has a nearly-as-good alternative: transact with another buyer or seller at virtually the same price for virtually the same good.
In that situation there is no possibility for hold-up (imagine the relation one has with his/her coffee shop)

The economics of employment relationships

Under another perspective: "supply equals demand" would be an adequate model if right from the outset contractual guarantees could be put put in place determining the *what next* over the entire duration of the employment relation.
At the very same time: "supply equals demand" would be an adequate model if no party would ever have assets at risk and had to face the perils of hold-up.

The economics of employment relationships

In a nutshell:

open-ended nature of the relationship
PLUS
parties have assets at risk once they enter the realtion

takes us away from a "supply equals demand" model.

The economics of employment relationships

WHAT IS THE RIGHT MODEL THEN?

A new class of models

A new class of model will now be our main subject.
We will now learn the Economics of Enduring Employment Relaionships.
Let's so proceed to illustrate the keystones of this new class of models.

First keystone: the "what next" issue

Enduring employment relationships evolve as time passes in ways that are not entirely specified at the outset (nor can they be fully anticipated or predicted).
At the outset, the parties involved know that they are entering into a "make it up as they go" relationship.

Second keystone: Assets at risk

As time passes, the parties develop (and increasingly so!) assets specific to the relationship.
Thus, walking away means a loss of those assets.
And because these are assets at risk each side can hold up the other.

Third keystone: Governance

Governance provisions do specify which party either by formal agreement or by custom have the right to decide on the "what next" issue.
CRUCIAL!!!
Exercise: gather some info on the relation between Toyota and its subcontractors. (. . . you'll be surprised. . .) Exercise: Tesla is barred from selling its cars in Michigan

Fourth keystone: Efficiency, ability, information

Better decisions means more value for the parties to split and better odds of surviving.
So decision rights should be assigned to the party with the best information and the best ability.

Fifth keystone: Credibility

Parties should be comfortable that they won't be held up or exploited by the decisions of others and they should be willing to invest in the relationship (which means putting even more of their assets at riks).
So, the credibility of the decision maker not to exploit its decision power is crucial

Sixth keystone: Reputation

The most important source of credibility is the decision making party's desire to keep and even enhance its reputation for not exploiting its decision making authority.

Two further remarks

First: incentive theory biases thinking in the direction of measurable performance and usually involves measures of short-run performance.
Second: the model of governance in incentive theory is that the employer says how the employee will be rewarded and the employee responds within a well understood and fixed set of rules. Things are way more complex than this especially as (new) events unfold. Focus should be on processes by which decisions are taken.

Enforcement and implicit contracts

One of the main features of agency contracts is their being "formal" or "explicit".
This means, among other things, that they can be enforced by a third party.
This is normally referred to as *external enforcement*
External enforcement is often impossible or way too costly, e.g. think about linear contracts.

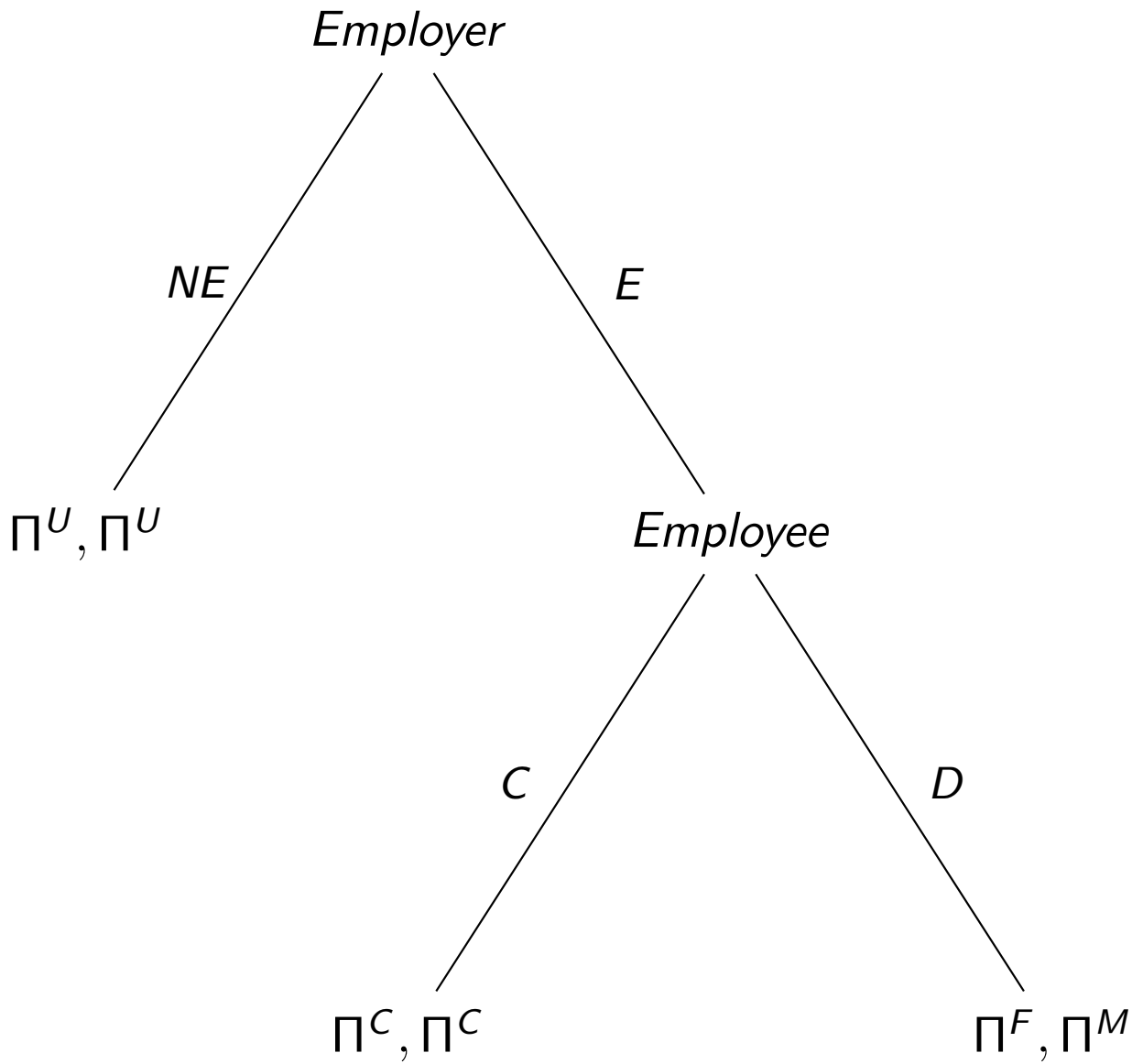
Enforcement and implicit contracts

In some cases an *implicit contract* scheme is adopted whose realization is based on the very same actions and decisions taken by the parties and on their reputation.
An implicit contract is an agreement setting the behaviors and rules that each party should abide to.
Usually: promises, threats, expectations ...
That's why they are also called *self enforcing contracts*: their execution is based on the parties' behavior (*endogenous enforcement*).

The Trust Game

Let us now examine how two parties execute an implicit contract establishing some form of cooperation between them without the intervention of an external authority.
This is called the *Trust Game*

The Trust Game



The Trust Game

Π_U reserve utility
Π_C payoff to cooperation
Π_M payoff to employer's opportunism. Note: $\Pi_M > \Pi_C$
Π_F payoff to employer after employee's opportunism
So: $\Pi_M > \Pi_C > \Pi_U > \Pi_F$

The Trust Game

One shot single play: by backward induction, employee would choose D once employer has chosen E as $\Pi_M > \Pi_C$
As a consequence never would employer choose E as $\Pi_U > \Pi_F$
Consequence: loss of mutual advantages to cooperation.

The Trust Game

Nothing changes for a finite or known number of repetitions.
Everything changes if at each play there is a non zero probability that the game will last for another play. (E.g. there is a non zero probability that one either gets fired or work for another time period).

The Trust Game

Key: if the game is indefinitely repeated, player know that their actual behavior can actually imply e.g. being fired or other credible threats...
...and they use this info at the time of their present choices
Consider this: the employer threats the employee with "I shall fire you if you don't cooperate", so I shall start by hiring you (E) and I shall keep playing E as long as you play C but I shall stop the game (i.e. "fire you") as soon as you play D.

The Trust Game

The employee then can:

1. play C and get Π_C
2. play D, get Π_M

Note: $\Pi_C < \Pi_M$ but employer would eventually be fired so he would receive Π_U afterwards and $\Pi_U < \Pi_C < \Pi_M$.

The Trust Game

So: for the contract to be executed and the gains from cooperation be attained one must be sure that short time gains obtained via opportunism (defection) be smaller than the actual value of the flow of future payments generated by cooperation.

Intermezzo for a quick reminder

Question: How do we calculate (discount) the actual value of a future payment?
Answer: we discount the payment via a discount factor $\delta = 1/(1+r)$ where r is the intertemporal discount rate.
E.g. if $r = 5\%$, the actual value of €1.000 in a year is: $\frac{1000}{1{,}05} = 952,38$.
So: the larger δ is (i.e. the smaller r is) the more indifferent you are between today and tomorrow

The Trust Game

If the employee cooperates (s)he obtains:

$$\Pi_C + \frac{\Pi_C}{(1+r)} + \frac{\Pi_C}{(1+r)^2} + \ldots + \frac{\Pi_C}{(1+r)^n}$$

and that is:

$$\Pi_C \left[1 + \frac{1}{1+r} + \frac{1}{(1+r)^2} + \ldots + \frac{1}{(1+r)^n} \right] = \Pi_C \, \frac{1+r}{r}$$

The Trust Game

If the employee chooses D, (s)he first obtains Π_M (and $\Pi_M > \Pi_C$) but after that and ever after (s)he will only get Π_U (and $\Pi_U < \Pi_C$).
That is:

$$\Pi_M + \frac{\Pi_U}{(1+r)} + \frac{\Pi_U}{(1+r)^2} + \ldots + \frac{\Pi_U}{(1+r)^n}$$

and that is:

$$\Pi_M + \frac{\Pi_U}{r}$$

The Trust Game

Employer will then play C and execute the contract iff:

$$\Pi_C \frac{1+r}{r} \geq \Pi_M + \frac{\Pi_U}{r}$$

. . . does this sound familiar?

The Trust Game

Conclusion: contractual enforcement is more likely as:

- the higher the gains from cooperation are (i.e. the larger Π_C is wrt Π_U)
- the smaller the benefits of opportunism (the smaller Π_M is wrt Π_C)
- the smaller r is and the smaller the probability that the relation be interrupted is. Note: low values for these two parameters implies a high benefits for future payments. Thus: if δ is close enough to 1, then cooperation is sustainable in the repeated game.

Does anything change with the Gig Economy?

- Traditional jobs VS gigs
- Efficiencies? Better talents/job matching, autonomy in time management, efficiency in using (own) capital, potentially legall and tax efficiencies
- What as to motivation? i.e. motivating gig workers?

Joseph Stiglitz

Original paper: Shapiro, C., Stiglitz, J.E. (1984). "Equilibrium Unemployment as a Worker Discipline Device". In *The American Economic Review*, 74 (3): 433–444.

Nobel motivation: "[. . .] for their analyses of markets with asymmetric information."

"Their" refers to Michael Spence and George Akerlof (Nobel price co-winners)

Main hypothesis

No firm will ever hire underbidders as a strong relation exists between wage level and effort level.
So: even if one assumes no workers' negotiation power nor firing costs, there could be hurdles to flexibility towards lower wages.
Note well: this is the kind of flexibility needed to "absorb" the unemployed and eventually reach full employment.

The model: worker's decision

A worker can either work or shirk:

$$e > 0$$

$$e = 0$$

The model: worker's utility

A worker's utility will be given by:

$$u = w - e$$

The model: being caught

Let us assume imperfect observability.
Let p the probability that the worker will be caught while shirking. So let:

$$p < 1$$

The model: contract

The firm pays $w*$ or fires the worker that has been cought shirking.
Once fired, the worker obtains his/her reservation utility $\underline{w}$

The model: contract

If the worker exerts positive effort, his/her utility is given by:

$$u_H = w^* - e$$

The model: contract

The opportunist worker (shirking) gets:

$$u_S = (1 - p)w^* + p\underline{w}$$

The model: determining the efficiency wage

The efficiency wage is set as to deter opportunistic behavior based on:

$$u_H \leq u_S$$

that is:

$$w^* - e \leq (1-p)w^* + p\underline{w}$$

from which we obtain:

$$w^* = \underline{w} + \frac{e}{p} \tag{1}$$

The model: results

i) the efficiency wage must be higher than the opportunity cost $\underline{w} + e$

ii) the efficiency wage is higher as p is small. So, it looks like higher wages and control are alternative tools to deter opportunism.

Bowles' argument on control

Given that wages and control are among the most effective incentives for effort, one should ask which of the two is more widely adopted by firms, which of the two is more efficient and under which conditions.
Samuel Bowles, has stressed that firms tend to prefer costly investments in control (thus increasing p) rather than paying higher wages (given a wage level sufficient to labor extraction).

Bowles' argument on control

Higher wages are not a waste of resources for society as they are a transfer from employers to employee.
Quite on the contrary, control related costs do actually consume real resources and, indeed, the capitalistic firm as an institution, has been described by many as an institution whose main *raison d'être* is its increased possibility of control rather that superior technological efficiency.
If higher wages would be paid and, at the very same time, fewer resources were spent on control those resources could be freed and used for production.

Bowles' argument on control

In a sense, monitoring costs do not fit well with profit maximization and they would not be necessary at all if only levels of effort could be perfectly enforced by a contract.

Baker and Hubbard

Baker and Hubbard (1998) offer a most interesting example.
In the eighties, some US trucking companies equipped their trucks with computers with the aim of monitoring drivers' behaviors and actions.
These computers allowed companies to have detailed information on a quite remarkable set of divers' and trucks' operations: mostly those in which a conflict of interests was more relevant for the company itself such as speed, idle time and the like.

Baker and Hubbard

The key point is that these computers did not provide any improvement — say a more effective coordination between drivers and dispatchers — in the service whatsoever.
Their main and probably sole function was rather to enlarge the domain of contractibility: the space of drivers' behaviors — first and foremost those behaviors that more heavily conflicted with companies' interests — that could be enforced by a contract thanks to making them observable and verifiable.

Facts and questions

No firm gives up control
Quite on the contrary: control expenses are increasing (much literature on this point)

Facts and questions

So, what is the social function of control?
Is control the only reason that firms do exist?
How does world in which control is perfect look like? (. . . wages should drop. . .)
Can you actually use control to get effort?
Are things changing with Industry 4.0? e.g. Cloud Computing, Smart Factories, Big Data Analytics, IoT, Advanced HMI. . .
Have a look at the following slide:

Datification (S. Zuboff)

Recent times have seen an astonishing growth in the production of data. More data was created in 2014 and 2015 than in the **entire history of humankind beforehand**, and by 2020 there will be approximately 44 zettabytes, or 44 trillion gigabytes, of data (Marr, 2015).
Along with the growth of data has come new empirical methods for analyzing it (machine learning, text mining).

Data, Big Data, New Kinds of Data

One of the most important use of machine learning is the ability to use entirely new types of data.
Econometrics: uses data that are "regular": they can be represented in rectangular form with rows corresponding to individual observations and columns to variables. Moreover, variables are typically recorded as single, quantitative measurements.
However, many of the newly available digital data sources do not have this format: text, satellite images, and web search profiles contain vast amounts of economically relevant information but have non-standard data structures.
Machine learning can be used to extract the important information from these sources, and clean them for econometric analysis.