Experimental Economics

Lecture IX - **Behavioral labor economics**

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References: Charness, G., & Kuhn, P. (2011). Lab labor: What can labor economists learn from the lab?. In Handbook of labor economics (Vol. 4, pp. 229-330). Elsevier.

Why laboratory experiments in labor?

- Control
    - Elimination of environmental factors that are impossible to disentangle
    - Relatively low cost (compared to field)
    - Revealed preferences (compared to survey)
    - We can identify causal relationships instead of just correlations

- Specific hypotheses and competing explanations, e.g. when multiple equilibria can be reached
- Variables that are hard to measure in the field - sabotage, discrimination, spite, beliefs
- Testing of institutions – perfect clean test, ideal conditions – if it does not work in the lab it will never work IRL
- Dropping lab like dropping animal studies from cancer research

Labor markets

- Why do we observe involuntary unemployment in the world?

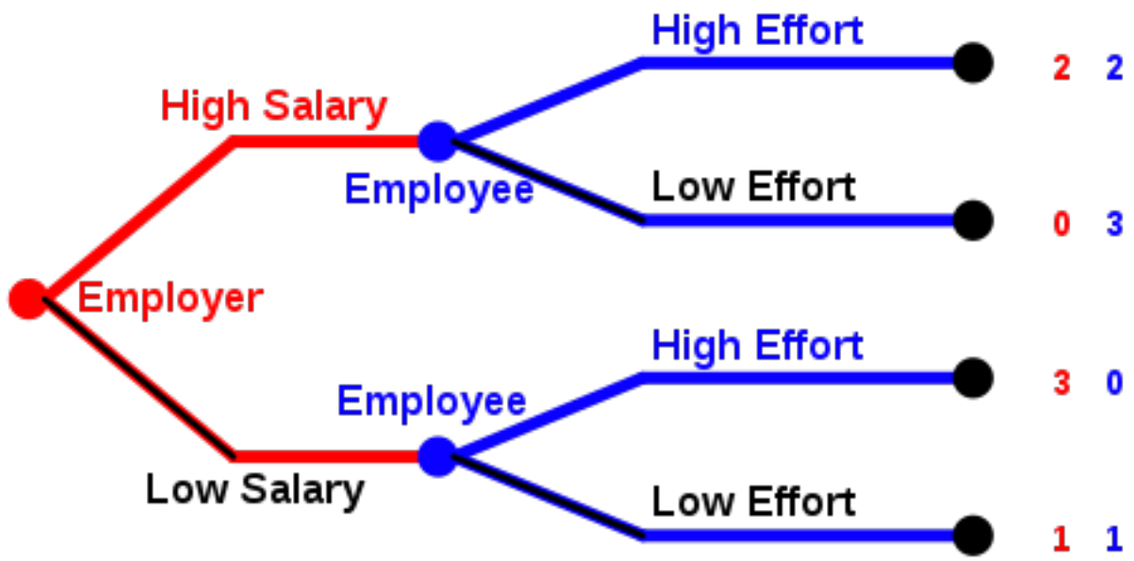
- Economic theory says that if the supply exceed the demand, then the price should fall and new equllibrium should emerge. However, in labor markets, we do not observe price (wage) falling too often, which is why oversupply of work (involuntary unemployment) arises.

- The main reason of employers to not decrease wages is that they fear that most productive workers would leave (an adverse selection argument), but a close second is that worker effort would decrease (a reciprocity argument). Along the lines of loss aversion, a pay rise is predicted to have some benefit, but it is clear that a wage cut is expected to have a significant negative effect. If employers are reluctant to cut wages because it will cause negative reciprocity then we have a plausible reason for wage stickiness.

- In laboratory, these predictions are usually tested using a gift-exchange game. The gift exchange model is used to explain workers' effort and wages provided by firms in the real world. George A. Akerlof described labor contracts as "partial gift exchange". Employees may exceed the minimum work required and firms may pay more than the market-clearing wage.

- According to Akerlof's model, this is because the worker’s effort to some degree depends on the norm for effort. Thus, to affect these norms, firms may pay more. A worker may be willing to work hard if he believes the employer is being kind and offering a higher-than-equitable wage.

Gift exchange



- Two players are at least involved in such game – an employee and an employer. The employer has to decide first, whether to award a low or higher salary. Having observed her wage, the employee chooses how much effort to put into working. Higher effort costs the worker, but also means the employer receives higher revenues.

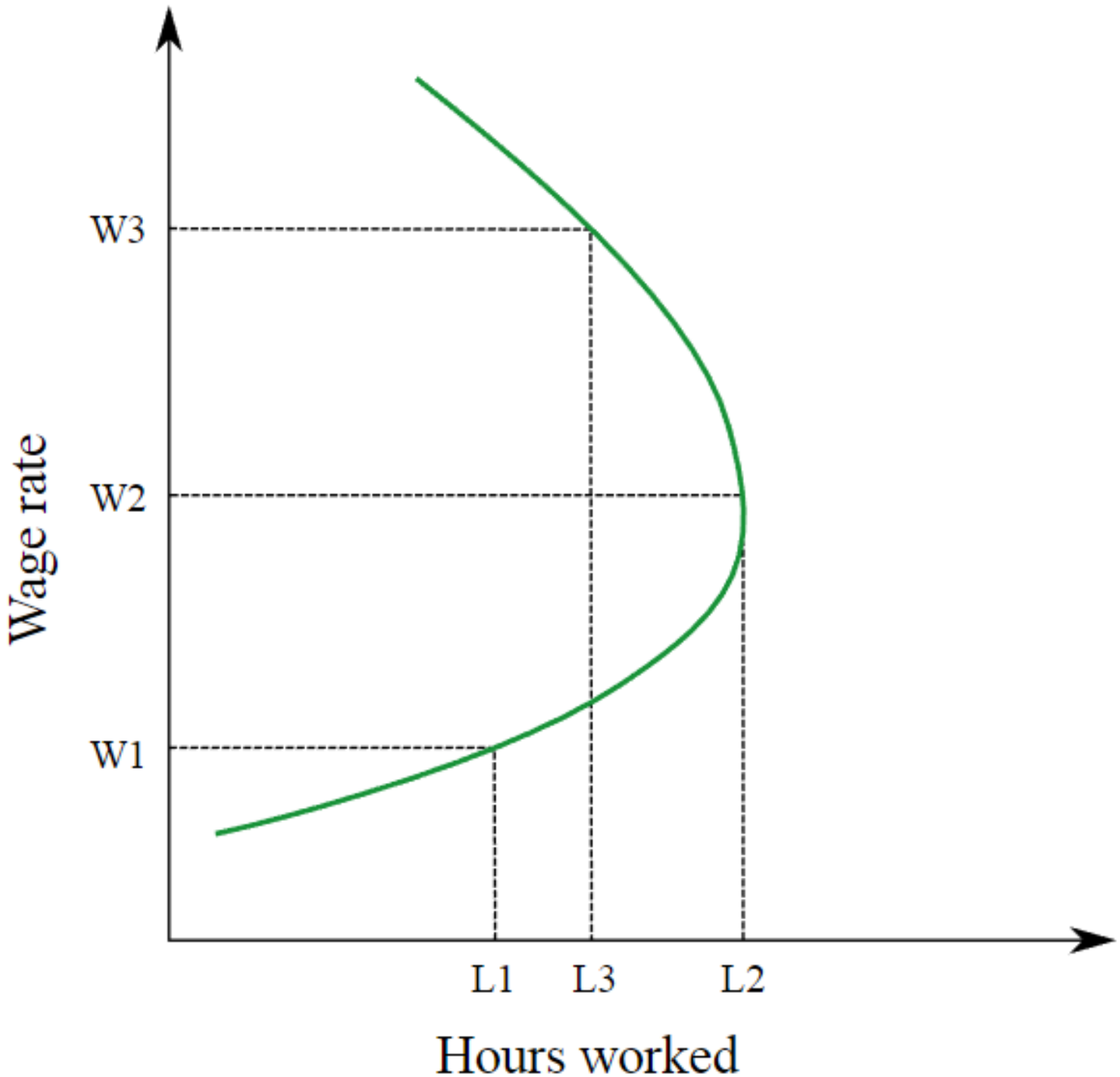
- Cost and revenue are usually designed in such a way that higher worker effort is mutually beneficial – i.e. the extra effort would earn enough extra revenue that the employer could pay a high enough wage to offset the worker's effort cost. A worker motivated solely by her own monetary payoff would not put in effort, however, because it is too late to do anything about her wage, and so all it would do is lower her payoff. Given this, why should an employer pay a high wage? He should not.

- Like in trust games, game-theoretic solution for rational players predicts that employees' effort will be minimum for one-shot and finitely repeated interactions. Therefore, there is no incentive for the employer to pay a higher salary. If the employer pays a higher salary, it is irrational for the employee to put extra effort, since effort will reduce his or her payoff. It is also irrational for the employee to put extra effort while receiving a lower salary. Therefore, the minimum salary and the minimum effort is the equilibrium of this game.

- The payoff matrix of the gift-exchange game has the same structure as the payoff matrix of Prisoner's dilemma. The difference constitutes by the sequentiality of gift-exchange game.

- Many experiments observe that workers in the gift exchange game provide substantially more efforts than the minimum required. The workers' choices appear to reciprocate the firm, in the sense that higher wages tend to lead to higher effort, which are against the standard assumption of strictly self-interested behavior.

Labor supply – neoclassical model



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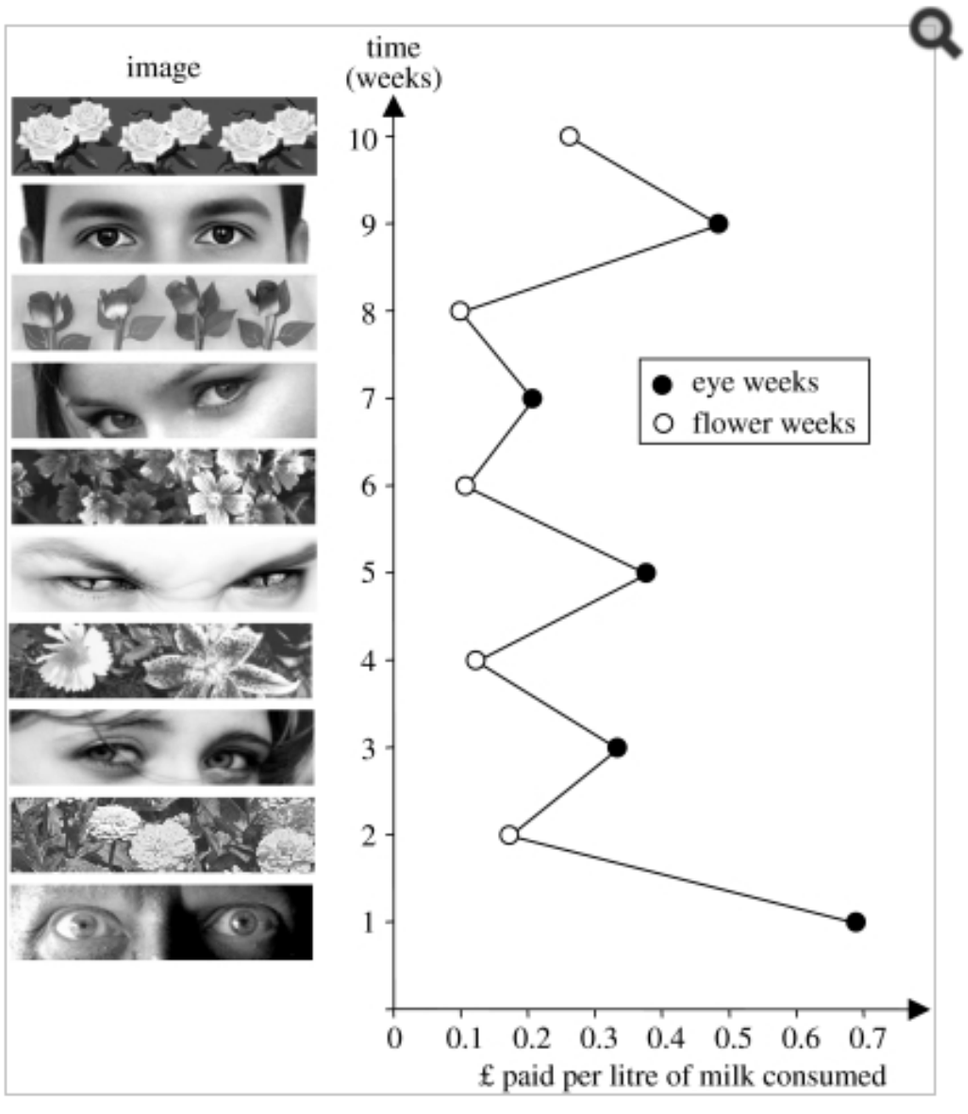
Behavioral findings

- Behavioral findings support the neoclassical model:
    - Compensated wage cuts reduce effort in animal labor supply studies
    - Uncompensated wage changes generate backward-bending labor supply curves
    - For humans, higher piece rates raise effort, agent self-selection into pay-for-performance schemes reinforces these effects. However, when the bonus size becomes very large, performance can decreased dramaticaly. This counterintuitive effect stemms from the stress and fear of possibly not getting the bonus (choking under pressure).
        - However, for humans there exists a special case - voluntary unpaid work. Not paying at all can yield higher effort than low pay. People also care about the “meaning” of their work.
- Workers provide more (less) effort when they are paid higher (lower) wages, but the magnitude of the responses is asymmetric. The negative response to the decreased wage is twice that of the positive response to the increased wage. The negative reciprocity by wage cuts had stronger and more persistent impacts on productivity of workers than the positive reciprocity by wage raise. These results tell us that workers punish firms more for decreasing wages than they reward firms for increasing wages.
- In other words, higher wage is reciprocated by higher effort (“gift exchange”). On the other hand, explicit penalties in the contract might lead reduction in voluntary cooperation among the workers. Thus, instead of carrot and sticks, common goals may be achieved on the basis of mutual trust and reciprocity between workers and employers.

Cheating and monitoring



- Self-reporting is very common in the workplace, particularly in skilled professions. Should employers monitor their employees so that they do not cheat?

- Experiments show that people are generally averse to lying. However, they tend to cheat a little bit when the opportunity arises. Especially sharp discontinuities in reward schedules induce workers to misrepresent their output.

- While we like to maintain positive self concept (to feel like good people), a lot depends on social norms. If everyone is cheating then I will be cheating too (monkeys and bananas).

- In any case, monitoring the agent can reduce agents' efforts (hidden cost of control). Unenforceable promises by principals to pay bonuses for 'satisfactory' worker performance can elicit surprising amounts of effort (trust).

Tournaments - relative performance pay

- Efficiency
    - Tournaments generally yield similar total effort but greater variance in mean output across agent groups in comparison with piece rates
    - Handicaps, or ‘affirmative action’ tend to improve the performance of tournaments between unequal agents
    - Decisions to enter into tournaments are often surprisingly close to optimal levels. However, entry can be sometimes excessive due in part to overconfidence
- Risk taking
    - Allowing risk-averse agents to self-select out of tournaments reduces the between-group variance in output
    - Tournaments can increase risk-taking
- Sabotage and collusion
    - Increases in tournament prize spreads can raise sabotage as well as effort; this effect can be strong enough to reduce total output.
    - Collusion is rare in anonymous tournaments with more than two contestants

Teams

- Equal shares
    - In the absence of communication and/or repeated interaction, teams in which agents are paid equal shares of the team's output perform poorly, with agents' efforts converging to low, individually rational levels after a few rounds of play. The forcing contracts (essentially group bonuses) typically fail to improve outcomes (co-ordination problems).
- Improving the team performance
    - When there is complementarity between the efforts of team members, loss of output due to co-ordination failures can be severe. Incentives based on the relative contributions of individual members to the team's output can improve teams' performance. Other mechanisms that have been observed to work include asymmetric incentives (while maintaining pay secrecy) and slowly adding new members.
    - Most importantly, communication in such situations can generate dramatic improvements, much more than strengthening financial incentives. In addition, adding competition between teams can be more effective than any of the above strategies (e. g. team sports).
- Teams also behavemore rationally than individuals. This suggests that teams learn more quickly than individuals (three heads are better than one).

Discrimination

- Gender
    - Female workers receive significantly lower wages than male workers, even when women are in the role of the firm.
    - This doesn’t pay for firms, as a high discrepancy between the wage requested and the wage offered leads to low effort.
        - Women are less inclined to compete.
        - The results in the patriarchal societies correspond closely to the results in Western cultures, however, comparison across gender goes in the opposite direction in the matrilineal society.
- Beauty
    - Physically attractive workers are more confident and higher confidence increases wages, these workers are also (incorrectly) considered to be more capable by firms, and these workers also have better oral skills that raise their wages.
    - However, there is also a “beauty” penalty as people expect more from attractive participants and “punish” them if the expectations are not met.

Multi-period Principal-Agent Interactions

- Ratchetting
    - The early pooling equilibria at low effort levels predicted by ratchet effects models can be generated in the lab
    - Labor market competition essentially eliminates the ratchet effect
- Signalling
    - The early signal-jamming equilibria at high effort levels predicted by career-concerns models can be generated in the lab
    - This suggests that agents are attempting to signal some personal characteristic, such as ‘honesty’ or a personal willingness to work hard.
- Investment in training
    - Enforceable long-term contracts induce more worker investments in firm-specific skills
    - The nature of ex post wage bargaining, and promotion policies affects investments in specific training

Motivation

- Imagine that all jobs could be characterized along two dimensions: the “countable” dimension comprises that which is concrete, well defined, and easily measurable (number of pins made, chips created, gadgets sold, and so on), and the “uncountable” dimension is somewhat ill defined and difficult to measure (improving a process, helping others, thinking brilliant thoughts, etc.).

- Of course, some jobs are more countable than others. When organizations attempt to create their compensation schemes, the first mistake they often make, as followers of the pin-factory doctrine, is to overemphasize the countable dimension. Managers are drawn to the subset of tasks that are easily measurable. As a consequence, they overemphasize those parts of the job and divert attention and effort away from the uncountable dimension.

- The second mistake managers often make is to treat the uncountable dimension as if it were easily countable. In fact, reducing labor to something simplistic and countable often misses the heart of motivation altogether. How many times are employees judged on the number of reports they have written, rather than on the quality of the work in the reports themselves?

- Persistence of an industrial-era view of labor - labor market is a place where individuals exchange work for wages (regardless of how meaningless the labor is) and that people typically don’t really care what happens to their work as long as they are fairly compensated for it. Breaking tasks into components and letting people specialize in their specific tasks, bit by bit and hour after hour, yielded a lot of efficiency gains. But from the workers’ point of view, this approach meant that they were nothing more than cogs in a wheel.

Motivation

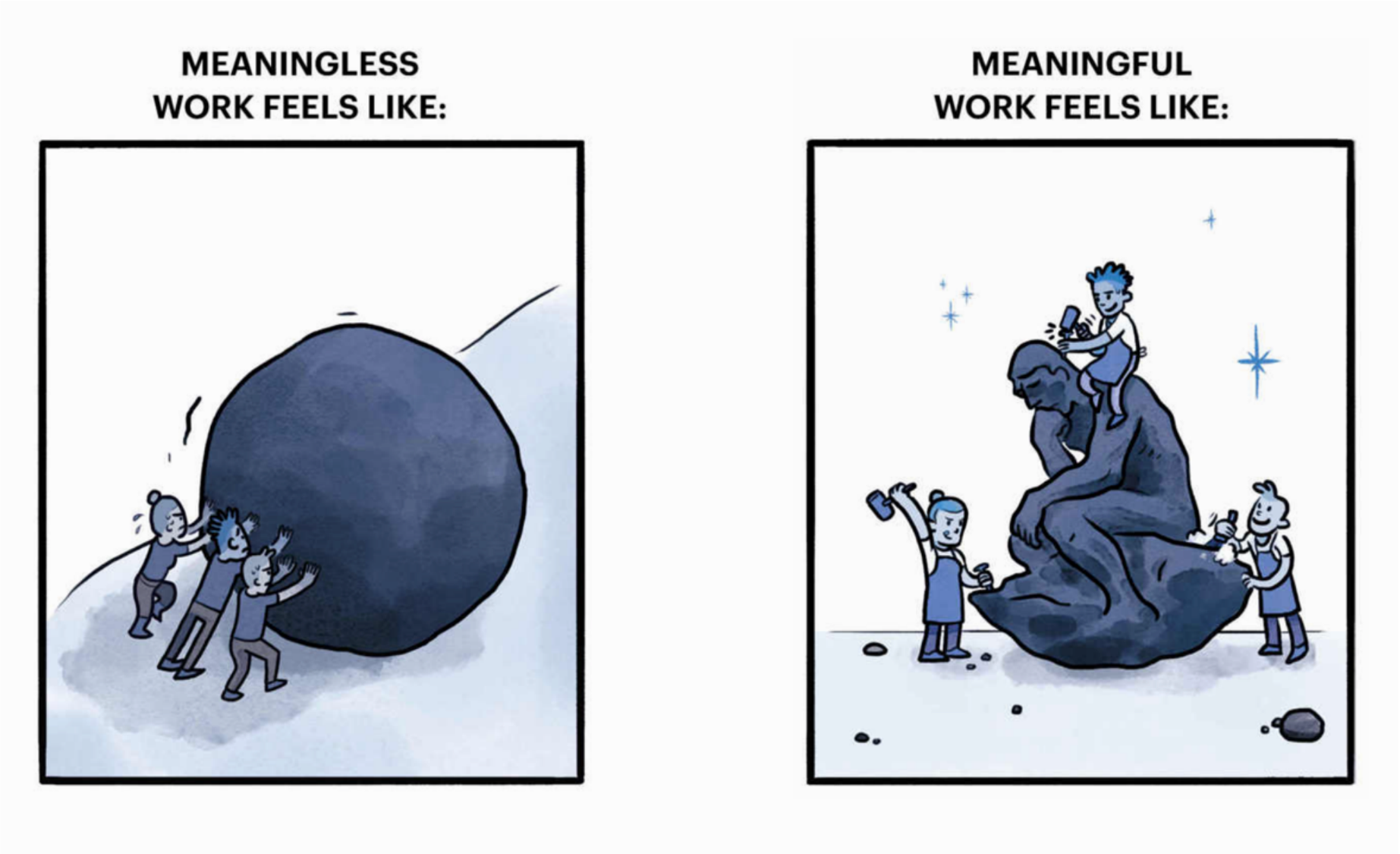
- In the knowledge economy, the workplace relies heavily on trust, engagement, and goodwill—and as the autonomy of each person in the organization increases, so does the importance of making everyone feel deeply connected to the enterprise. Trust and goodwill influences your desire to deliver real progress - stayed late at the office, answered emails while on vacation, helped a colleague on a project unrelated to your work, or thought about work-related questions on the weekend.

- People are motivated by identity, the need for recognition, a sense of accomplishment, and feeling of creation. As people feel connected, challenged, and engaged; as they feel more trusted and autonomous; and as they get more recognition for their efforts, the total amount of motivation, joy, and output for everyone grows much larger.

- IKEA effect - when we work harder and spend a bit more time and effort, we feel a greater sense of ownership and thus enjoy more the fruits of our efforts.

- Good practices: invest in employees' education, provide them with health benefits, invest in their well-being both within and outside of work, invest in their personal growth, provide them with a path for promotion and development within the company.

Meaning



- https://www.youtube.com/watch?v=5aH2Ppjpcho

What kinds of external rewards are best at positively motivating people?

- Intel experiment, 4 conditions
    - Monetary bonus: On the first day of the work cycle, employees in this condition were greeted by the following message from their boss: “Good morning! If you reach or exceed X chips today, you’ll receive 100 NIS in cash. Good luck!”
    - Pizza voucher: This time, the boss wrote, “Good morning! If you reach or exceed X chips today, you’ll receive a voucher for pizza. Good luck!”
    - Compliment: In this condition, workers were greeted by a message that informed them that if they reached or exceeded their production target, they would get a text message from their boss telling them “Well done!”
    - Control: In this case, chip makers received no note and were offered no bonus.

What kinds of external rewards are best at positively motivating people?

- The results from the first day of the work cycle were clear. Any incentive is better than no incentive, and the types of incentives we used (money, pizza, and a compliment) weren't very different from one another. But this analysis focused only on the first day of the work cycle. What about the next three days of the work cycle? Would there be a residual effect of the bonus on performance?

- On the second day of the work cycle, those in the money condition performed 13.2 percent worse than those in the control condition. "Yesterday they paid me a bit extra, so I worked harder. But today they aren't offering me anything special, so I don't care." On the third day, the news was slightly less bleak; those in the money condition dropped their performance by only 6.2 percent relative to the control condition. By the fourth day, productivity had drifted back toward the baseline Overall for the week, the monetary bonus condition resulted in a higher pay (the bonus) and a 6.5 percent drop in performance compared with no incentive at all.

- As we mentioned earlier, performance in the compliment condition rose 6.6 percent on the first day of the work cycle. From there, it slowly drifted down toward the control condition over the next three days. And the pizza condition? It fell somewhere in the middle between the monetary bonus condition and the compliment condition.

- We think and behave on a longer time scale, which means that managers need to take into account (and measure) not only the direct effect of different incentives but also their delayed and enduring outcomes. The more a company can offer employees opportunities for meaning and connection, the harder those employees are likely to work and the more enduring their loyalty is likely to be.

Motivational crowd-out

- Economic theory has been built on the idea that monetary incentives are primordial instruments to induce people to work. With the advent of economic psychology and behavioral economics, it has increasingly been understood that for many activities – most importantly in the voluntary sector, but also in normal economic areas – intrinsic motivation is crucial.

- Even more significantly, it has been understood that intrinsic motivation may be undermined by extrinsic interventions. In particular, this “crowding-out effect” as it is called in economics, applies when monetary payments are used for activities partly or mainly based on intrinsic motivation.

- Thus, the reliance on explicit incentives can be counter-productive and detrimental because they crowd out intrinsic motivations and one’s latent desire to do the right thing even without any financial incentives to do so.

- Explicit incentives “crowd out” intrinsic motivation when there is:
    - Intrinsic interest of the task
    - Personal relationship of principal and agent
    - Participation of agent in principal’s decisions

- And when employees
    - are only rewarded for doing the work specified (no promotions, honours, prizes etc.)
    - Perceive rewards as ‘controlling’ rather than ‘supportive’

Awards

- As individuals are known to crave recognition by their peers and a wider public, awards present a suitable instrument to raise intrinsic motivation: awards specifically honor persons for performing above and beyond the call of duty.

- Awards express appreciation in public, and thus simultaneously provide honor and esteem to the recipient. They can take many different forms, ranging from orders, crosses, medals, decorations, trophies, certificates to

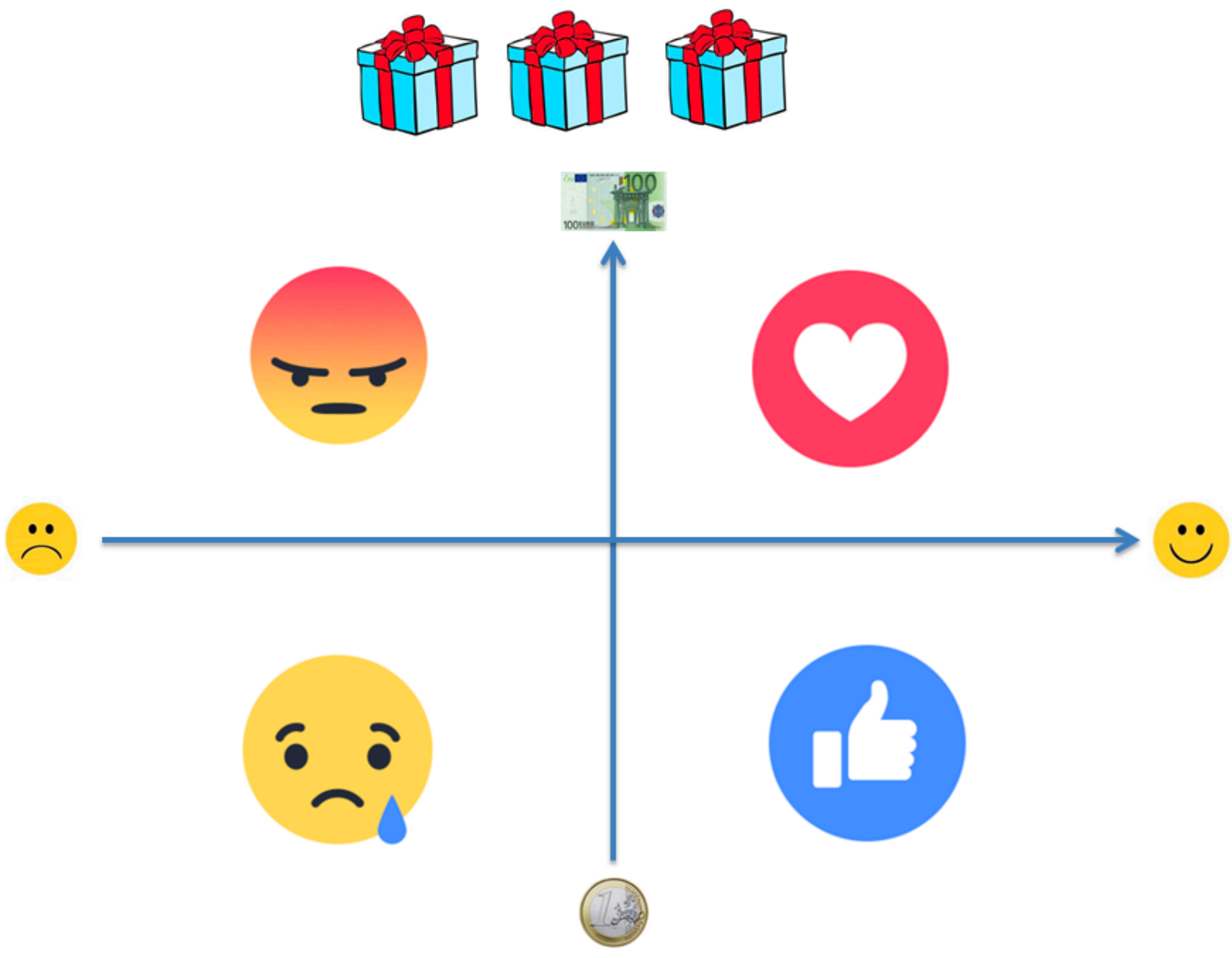
- Awards have prominent advantages over monetary compensation in several respects. Most importantly, awards may support intrinsic motivation because the giver explicitly expresses that the recipient has performed well and with distinction.

- Awards have greater visibility than bonuses and other monetary rewards since they are given in public and often draw media attention. This visibility makes the signal of recognition more credible as the award givers put their own reputation at risk.

- A third advantage of awards is that they can be bequeathed for broad achievements, and the performance they honor need only be vaguely specified. With awards, the givers are able to recognize performance that is difficult or impossible to exactly define and measure.

- A further advantage of awards is that they can strengthen employees’ commitment to the organization honoring them.

Gifts



Matching markets

- In first lecture we tried a double-auction market. The basic objective of these institutions is to match buyers and sellers so that they can do mutually beneficial deals. Double-auction markets are, typically, efficient. What that basically means is that we get the best match of buyers and sellers. Great! Our focus, however, was on a market where each seller had the same thing to sell; the goods were homogeneous. Often this seems appropriate; for instance, one share in a company, or one can of a particular brand of cola, is as good as any other, so a buyer should be relatively indifferent as to who they buy from. In many other cases, however, goods are not homogeneous. For example, no two houses, restaurant meals or used cars are exactly alike. This makes it much more difficult to match buyers and sellers efficiently.

- To illustrate the problem, we can look at the problem of matching workers to employers. In many professions, newly trained graduates simultaneously try to find entry-level jobs with employers. What we hope to see is the best match between the worker or supplier of labor and the employer or demander of labor. Workers will have different preferences over where they would rather work, however, and employers will have different preferences over who they would rather hire. It is very easy for this to become a bit of a mess, with great candidates getting no offers and great employers finding that no one accepts their offers. Obtaining the best match is far from easy. One profession that has tried hard to tackle this problem is the medical profession.

- The problem in the medical profession is to match newly trained doctors with hospitals willing to employ them. To demonstrate the problems there can be, we can look at the experience of the United States. Before 1945 the market for new doctors was decentralized, like a negotiated price market. The outcome was an unraveling of contract dates, in which the best students were being hired earlier and earlier as hospitals tried to get the best candidates before anyone else did. In the end, students were being hired two years before graduation. This meant that hospitals were hiring students before they had a chance to see how good they really were, or students had a chance to see what type of medicine they would most want to practice. This is inefficient.

Matching markets

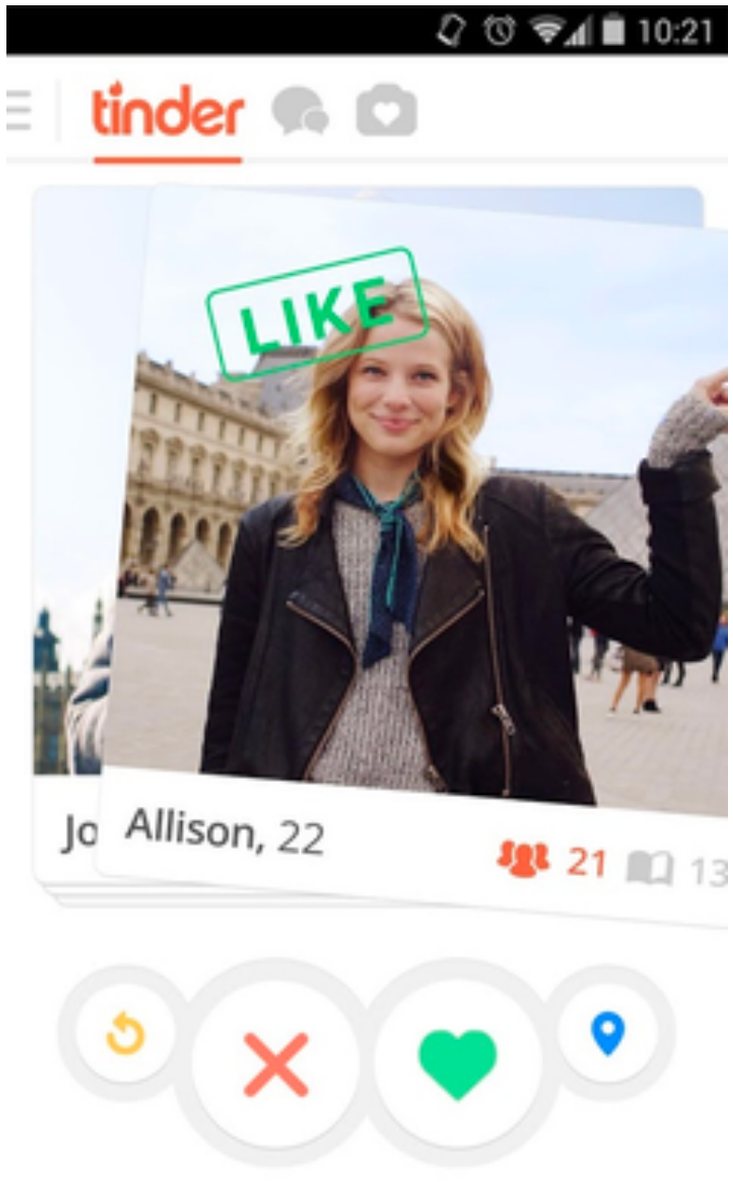
- In 1945 medical schools banded together to try to improve matters, but a new problem arose. This time candidates who had offers from one place would wait to see if they got an offer at a preferred place. This might sound reasonable but, if everyone is doing it, then everyone is waiting for everyone else to make a decision. Nothing happens until the deadline for acceptance, and then there is a last-minute rush and decisions are being made with little time to think. This is also inefficient.

- In 1952 the National Resident Matching Program was set up as a central clearinghouse for applications. A way had to be found to match doctors with hospitals that would avoid the previous problems. Since 1998 the program has used a matching algorithm designed by economists, notably Alvin Roth, and the process is a lot more efficient. Let's look first at the algorithm used.

- After a process of interviews and visits, doctors submit a ranking of their preferred hospitals, and hospitals submit a ranking of their preferred doctors. Something like a deferred acceptance algorithm is then used. The algorithm is as follows: each doctor is assigned to his or her first choice of hospital. The posts at each hospital are then filled with the most preferred doctors assigned to them, and other doctors are rejected. Any doctor rejected at this stage is assigned to his or her second choice of hospital. The posts of each hospital are then refilled with the most preferred doctors assigned to them, and other doctors rejected. And so the process continues.

- The experiments confirm the advantages of the deferred acceptance algorithm. The deferred acceptance algorithm looks as if it does a good job both in theory and in the experimental laboratory. This has translated into success in the real world. The algorithm has proved successful in matching doctors to hospitals and is now being used in other areas as well, such as matching prospective students with schools. (The biggest mystery is why economists have not used it in their own profession to match junior faculty to departments!) In 2012 Alvin Roth won the Nobel Prize in Economics 'for the theory of stable allocations and the practice of market design'.

Matching markets



	1ST CHOICE	2ND CHOICE	3RD CHOICE
Ross	Rachel	Phoebe	Monica
Chandler	Rachel	Monica	Phoebe
Joey	Phoebe	Rachel	Monica

	1ST CHOICE	2ND CHOICE	3RD CHOICE
Rachel	Joey	Ross	Chandler
Phoebe	Ross	Chandler	Joey
Monica	Joey	Chandler	Ross

	1ST CHOICE	2ND CHOICE	3RD CHOICE
Ross	Rachel	Phoebe	Monica
Chandler	Rachel	Monica	Phoebe
Joey	Phoebe	Rachel	Monica

→ Ross – Rachel Chandler – Monica Joey – Phoebe

	1ST CHOICE	2ND CHOICE	3RD CHOICE
Rachel	Joey	Ross	Chandler
Phoebe	Ross	Chandler	Joey
Monica	Joey	Chandler	Ross

→ Rachel – Joey Phoebe – Ross Monica – Chandler

Takeaways

- Laboratory experiments are excellent tool to gain insights into labor market and interactions as they allow for control over environment features that cannot be separated or are hard to measure in the field
- Generally, experimental results support the neoclassical labor supply theory, even the backward bending is observed
- Higher wage is reciprocated by higher effort (“gift exchange”).
- Tournaments generally induce the similar levels of efficiency as piece-rate pay, however, also bring wider variance
- Competition amongst teams and communication inside teams are the major factors driving up the team performance
- Incentive scheme that praises more some tasks over another disrupts the total efficiency if the tasks are complementary
- Outside options are crucial determinant of effort decisions (ratchetting vs. signalling)
- A discrimination based on gender or beauty is driven mainly by stereotypes
- A good motivation schemes understand the crowd-out effects and the fact that uncentives/features other than the wage can significantly influence the labor supply (e.g., inherent joy, sense of accomplishment, compliments, awards, gifts…)

Leadership lessons from a dancing guy

- https://www.youtube.com/watch?v=fW8amMCVAJQ