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EC262 Term Paper

Overcoming the 'free-rider problem' in a group project in the organisation

Introduction

Group projects are a way for people to get their tasks done as a team. Some of its advantages are enhancing communication skills and teamwork skills by working collaboratively and getting different ideas and perspectives. However, sometimes there might be free-riders who are only there for the benefits in a group. Free-riding is defined as "a behaviour pattern wherein an individual working in a setting fails to contribute his or her fair share to a group effort as perceived by group members" (Aggarwal & O'Brien, 2008). In this paper, I will be discussing the different factors causing free-riding and solutions to overcome the free-rider problem in a group project in the organisation.

Factors causing 'free-riding' in group work

Coordination problem

Coordination problem is one of the most common factors that cause free-riding in group work. The lack of chemistry and trust between group members cause them not to communicate their goals and lead to one or more group members to free-ride. In an organisation, it is possible to lack partnership due to employees having not stayed in the company for long. As they have not had the chance to connect with fellow members more, they will not have a sense of loyalty and dependency between each other. However, team spirit and teamwork are not enough to crowd out the free-riding effects. There should also be peer pressure as employers can use it to motivate workers under certain circumstances (Kandel & Lazear, 1992). This "… explain(s) the popularity of orientation meetings, quality circles and company picnics." (Lazear, 1991). This is to ensure that the employees get connected with their peers and with managers and other

high-ranked people in the organisation, creating bonds that can help solve the free-riding problem. Suppose there is enough trust and loyalty with each other. When team members free-ride, it can "… be translated into guilt or shame associated with letting friends down on the and can raise the equilibrium level of effort, and thus the utility of workers." (Lazear, 1991).

Attitude towards group work

Another reason members might free-ride is their own attitude towards group work. In a paper by Börjesson et al. (2006), they discovered group psychology in free-riding, where everyone has their own roles in group work. The supervisor, or in this case the principal, should be aware of this. Instead of only asking for results, they should also ask the group about their own opinion of how it works and "functions" together. This brings back to my point of "chemistry" as everyone in a group should be able to work together harmoniously and have a sense of trust with each other so that they can get the best result out of it and no one free-rides. Psychological tests can be used as a more detailed analysis of each group member to determine the differences in a group (Kukuckova & Žiaran, 2018).

Principal-agent problem

On the basis of it, it's a simple principal-agent problem where there is conflict in priorities between a person or group and the representative authorised to act on their behalf. Going back to my previous point, each group members have a role to play – some of them may self-proclaim as the "leader" of the group, which makes them the "principal" in the group project, while other members are the "agents". Per Vernon (2008)'s theory, higher-status group members may gain more feeling of ownership of the project and may lack trust in other group members as they fear they do not have the abilities to do the project as well as they want to. Low-status group members then may choose to push work to other members or not express

their ideas as they fear that the higher-status group members might look down on them. The idea of 'lone-wolf' where everyone thinks they are a principal themselves may also occur in a group project. “The lone-wolf, who frequently excels academically, often lacks confidence in other group members, holding a belief that their work abilities exceed that of the others and that working with the group would be of disadvantage to them.” (Barr, 2005). Other members of the group may free-ride if they feel like they are not appreciated and that their ideas are not being heard. Something to consider here is that maybe some people are just not meant to do group work and are better off doing work alone, while others work better in a team and strive more in group projects. In an analysis complementary to Holmstrom & Milgrom (1991), Itoh (1991) studies the conditions where instead of having group projects, employers may choose to induce workers to work separately on their tasks, and help each other out when individual workers need help with specific jobs.

Incentive designs have limitations

We should also note that incentive designs by organisations have limitations. Rewards are usually measured by group work, not individually. Principals in an organisation cannot see who has made an effort and who has not individually, hence only measuring effort as a group. Group members should all focus on having intrinsic motivation to do work instead of just focusing on getting extrinsic rewards for their work. It is noted by Lazear (1991) that Frey (1991) argued that there is an economic logic to the notion that extrinsic rewards can have a negative effect on effort. He suggests that individuals rationally respond to the amount of "work morale" attributed to them. If work morale is thought to be lower than it is, workers rationally reduce their morale, resulting in less effort. Using extrinsic rewards signals the worker that the principal believes work morale is low. Consequently, the worker reduces morale so that when the extrinsic reward is withdrawn, effort is lower than it was before. In an article by Baker et

al. (1988), Kohn (1990) also agrees that incentives can be bad for businesses in three ways, "First, rewards encourage people to focus narrowly on a task, to do it quickly as possible, and to take few risks … Second, extrinsic rewards can erode intrinsic interest … [Finally], people come to see themselves as being controlled by a reward."

Possible solutions to overcome the free-rider problem

Bonuses and penalties

According to the public goods game in game theory, in a two-individual group, each individual can contribute to a public good which has a value of V for both or free-ride on it. The contribution cost is C if only one contributes and C/2 if both contribute. The cost of free-riding is 0. The net payoff matrix is:

	Contribute	Free-ride
Contribute	V – C/2, V- C/2	V – C, V
Free-ride	V, V - C	0, 0

If C/2 < V < C, the Nash equilibrium of the public goods game is mutual free-riding. In an *n*-individual group with large *n*, it is very likely that V > C/*n*. Therefore, it is very inefficient to mutually free-ride.

By introducing penalties, we can solve the free-riding problem. Suppose that a penalty P is imposed on anyone that free-rides; we can then rewrite the net payoff matrix as:

	Contribute	Free-ride
Contribute	V – C/2, V- C/2	V – C, V
Free-ride	V, V - C	-P, -P

Any P such that V – C/2 > V – P > -P can solve the free-rider problem, e.g P = C/2 + **ε**, where **ε** > 0.

We will look at the minimum effort game where each worker simultaneously chooses an effort level for bonuses. Each worker's payoff is a decreasing function of their effort and an increasing function of the selected minimum effort by other workers in the group. Payoffs are set up so that it is worthwhile for a worker to raise his effort level if and only if it will increase the minimum effort for the group, which causes coordination problems.

Net Payoff of the Minimum Effort Game: An Example

		Minimum effort by other employees				
		0	10	20	30	40
Effort by employee *i*	0	200	200	200	200	200
	10	150	210	210	210	210
	20	100	160	220	220	220
	30	50	110	170	230	230
	40	0	60	120	180	240

Earlier experiments show that workers fail to coordinate at high effort levels. However, Brandts & Cooper (2006) found that monetary incentives can solve coordination failure. Here, we focus on the bonus rate that determines the fraction of the firm's profits transferred to the workers.

Net Payoff of the Minimum Effort Game: Higher Bonus

		Minimum effort by other employees				
		0	10	20	30	40
Effort by employee *i*	0	200	200	200	200	200
	10	150	290	290	290	290
	20	100	240	380	380	380
	30	50	190	330	470	470
	40	0	140	280	420	560

The results from their experiment show that increasing the bonus rate leads to an improvement in coordination among employees. The magnitude of the bonus rate increase does not seem to matter as significant changes in the bonus rate lead to no greater improvement in coordination than a smaller increase.

It's worth noting that bonuses and penalties should be well designed to ensure that they are not counterproductive and make people lose interest in their intrinsically interesting job (Deci, 1972). The framing of salaries may be flawed as it is not very good at predicting when the market will choose a penalty specification or a bonus specification. An example that is given by Lazear (1991) is that "… workers are usually given large Christmas bonuses for good performances rather than small Christmas penalties. But those same workers are usually penalised by being docked pay for arriving late, rather than rewarded with an on-time bonus". These designs must also account that the principals may not observe every member of the group, so they may not know whom to penalise and, consequently, fail to solve the free-riding problem if the group does a good job overall.

Mutual monitoring

This brings me to my second solution, which can go hand-in-hand with the previous one - where there should be mutual monitoring between group members to ensure everyone is doing their work and to point out any free-riding behaviours. As noted by Baker et al. (1988), "… this system can only work when rewards and punishments are based on individual performance and not strictly on team performance – that is, mutual-monitoring systems only work if the shirkers are punished". This requires trust and loyalty between group members so that when they mutually monitor each other, there is a sense of peer pressure and wanting to be the best for everyone. This can translate into intrinsic motivation, which is always better as Deci (1972) argues that monetary rewards lower employee motivation, reducing the "intrinsic rewards" that an employee receives from the job. Organisations can use peer assessments to detect free-riding early as group members can self-reflections, and by receiving feedback, they can change their behaviour (Hall & Buzwell, 2013). We can use this system to understand the chemistry between each other and figure out what to improve in the next project. Groups can be formed

"… based on the expectations of which profiles will work well together", which in turn will lead to a better quality outcome in the group project.

Internal labour markets

The idea of gaining trust and building loyalty between employees usually has a time lag problem. If employees stay in a particular organisation for a longer period, they would have the chance to bond with fellow agents and principals, in return getting the sense of trust required to contribute to a group project instead of shirking case, free-ride. According to the Shapiro-Stiglitz theory of efficiency wage (1984), the worker will shirk if $G > p(W-U) \cdot n$, where W is the worker's wage, U is the outside option, G is the one-off that they gain when they shirk, shirking is detected with probability p, and the employee-firm relationship will last for *n* periods if the worker is not caught shirking. When this *n* period is longer, i.e., the employee has a long-term employment relationship, the chances of the employee free-riding would be low because the employee would usually feel “guilty” or “ashamed” to let fellow group members down (Lazear, 1991)

Conclusion

Overcoming the free-rider problem in a group project can be done by introducing bonuses and penalties, mutual monitoring and internal labour markets. However, specific points must be addressed when doing so because some of these solutions are linked together and must be carried out simultaneously to ensure no loopholes for free-riders to go through. There is also the fact that people cannot stop free-riding entirely as there is a difference between voluntary and involuntary free-riding that we should also look into when punishing or questioning free-riders. All in all, we as economists should look into the behaviours of free-riders more to solve this seemingly effortless but complex problem.

Works Cited

Aggarwal, P. & O'Brien, C., 2008. Social loafing on group projects: Structural antecedents and effect on student satisfaction. *Journal of Marketing Education,* 30(3), pp. 255-64.

Baker, G. P., Jensen, M. C. & Murphy, K. J., 1988. Compensation and Incentives: Practice vs Theory. *The Journal of Finance,* 43(3), pp. 593-616.

Barr, T., 2005. Exploring the 'Lone Wolf' phenomenon in student teams. *Journal of Marketing Education,* 27(1), pp. 81-90.

Börjesson, P. O. et al., 2006. *Free-riding in Group Work - Mechanisms and Countermeasures.* Lund, Sweden, Faculty of Engineering, LTH at Lund University.

Brandts, J. & Cooper, D. J., 2006. A Change Would Do You Good ... An Experimental Study on How to Overcome Coordination Failure in Organisations. *The American Economic Review,* 96(3), pp. 669-693.

Deci, E., 1972. The Effects of Contingent and Non-contingent Rewards and Controls on Intrinsic Motivation. *Organizational Behavior and Human Performance ,* 8(2), pp. 217-229.

Frey, B., 1991. *Monitoring and Crowding Out Work Morale,* s.l.: University of Chicago.

Hall, D. & Buzwell, S., 2013. The problem of free-riding in group projects: Looking beyond social loafing as reason for non-contribution. *Active Learning in Higher Education,* 14(1), p. 37–49.

Holmstrom, B. & Milgrom, P., 1991. Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design. *Journal of Law, Economics, & Organization*, 7 (Special Issue), pp. 24-52.

Jiang, L., 2020. *EC262 Lecture 7.* [Online] Available at: https://moodle.essex.ac.uk/pluginfile.php/1728679/mod_resource/content/1/EC262_7_2021.pdf [Accessed Dec 2021-Jan2022].

Kandel, E. & Lazear, E. P., 1992. Peer Pressure and Partnerships. *The Journal of Political Economy,* 100(4), pp. 801-17.

Kohn, A., 1990. Management Perspectives: Incentives Can Be Bad for Business. *The Journal of Nursing Administration,* 20(1), pp. 7-9.

Kukuckova, S. & Žiaran, P., 2018. Free-rider Problem in Classroom Games - Impact of Gender and Intergroup Conditions. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 66(6), pp. 1517-1525.

Lazear, E. P., 1991. Labor Economics and the Psychology of Organizations. *The Journal of Economics Perspectives*, 5(2), pp. 89-110.

Shapiro, C. & Stiglitz, J. E., 1984. Equilibrium Unemployment as a Worker Discipline Device. *The American Economic Review,* 74(3), pp. 433-444.