Management Accounting in the Third Millennium

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Monetary and Non-Monetary Incentive Schemes

By

Andrea Girardi

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INTRODUCTION

Managing modern organisations requires the implementation of appropriate incentive schemes to motivate employees and align their interests towards the organisation's goals. Goals are becoming increasingly complex and require multiple expertise, making it a challenging management task to motivate individuals. In recent decades, non-monetary-based incentive schemes have become more important than monetary incentives in motivating individuals. Research and practice have been exploring the effect of monetary and non-monetary incentive schemes on motivation, keeping this concept separate.

The book proposes an innovative review of the state of the art in monetary and non-monetary rewards and their effects on individual and collective extrinsic and intrinsic motivation and performances. Monetary incentives can be divided into absolute, relative, and collective. Absolute incentives, such as piece rates, reward individuals based on their measurable output. The system involves predetermined targets, and rewards are granted to all individuals who reach them. Under relative incentives, targets and rewards depend on all participants and individual outputs and are evaluated compared to the others. Typical examples of relative incentive schemes are tournaments where participants compete to get into top positions and win the rewards. In tournaments, rewards are generally significantly high, and whoever wins gains excellent utility.

Non-monetary incentives implement rewards based on social fulfilment rather than money to motivate. Typical non-monetary incentives are Status, Reciprocity, Social Approval, Justice, and Enjoyment. Status is connected to prestigious and distinguished societal and organisational positions. Reciprocity motivates people to return a tangible benefit or a positive feeling. Social approval is the sense that one belongs and is accepted by a specific social group. The perception of justice connects human values, and the idea that events are “just” is generally appreciated

by individuals. Personal enjoyment fulfils individual satisfaction and provides a sense of personal reward for what a person is doing.

The type of incentive (monetary and non-monetary) is closely linked to the type of motivation (extrinsic and intrinsic). Monetary incentives stimulate extrinsic motivation, while intrinsic motivation is generally associated with non-monetary rewards.

The book fills the gap in practical and conceptual tools to navigate the vast literature on the effects of rewards. The literature has widely explored the impact of rewards on individuals' responses to engagement and motivation types. However, the interdependence between managerial (types of rewards) and psychological (types of motivations) literature needs to be sufficiently explored in research and practice. The dissemination of these research discoveries still needs an aggregate and balanced tool to display the best practices and their inter-dependencies.

The book contributes to the research field by setting new spaces for investigation and to the practical field by proposing a schematic approach to navigate different reward schemes and their combined effect on individuals' motivation and performance. On the practical side, the book provides an aggregated overview of the best managerial practices helpful to practitioners and managers in navigating this complex field of managerial rewards. It highlights each incentive scheme's principal advantages and possible disadvantages by showing relevant research results.

CHAPTER 1

ABSOLUTE INCENTIVES

Absolute incentives are types of incentives that reward individuals for their effort or performance. This type of incentive considers only the performance of a specific individual, regardless of that of others.

Absolute incentives are structured to reward individuals for achieving predetermined individual targets. The primary motivation for managers to use absolute incentives is to stimulate individual performance. It motivates people to achieve a higher level of achievement than the basic level of achievement produced without introducing incentives.

Within the absolute monetary incentive category, the piece rate is an incentive system that remunerates the worker based on the number of units produced. This remuneration system differs from the hourly remuneration system in some respects. In the case of hourly remuneration, people are remunerated for their activities performed within a predetermined period, such as their work shifts. The workers provide the labour force and are then made available to the organisation for hourly compensation. In this case, instead of the piece rate, the worker's compensation is proportional to the number of units of output generated. Therefore, the time dimension in this second remuneration system is only a contour to the most crucial variable in calculating a worker's compensation, the number of units produced. The worker who could generate twice as many units of output in the same time as another worker would get twice as much compensation for the same amount of time spent at work.

This book chapter aims to explain whether and how absolute monetary incentives can positively or negatively influence worker performance. While common sense might suggest that workers engage more where their compensation depends on the output produced rather than the time spent at work, this chapter will explain in detail whether and how this belief is

proven by empirical evidence and what side effects may arise from introducing or maintaining absolute-type monetary incentive systems.

Piece Rates: Do they work?

For this first section, we will stress the theory of an individual, as well as the absolute and monetary incentives on final performance. Much research on the field and in the lab shows how agents tend to be more productive when using a piece rate model. Examples include Bull, Schotter and Weigelt (1987), Ichniowski, Shaw and Prennushi (1997), Paarsch and Shearer (1999, 2000), Lazear (1996), Lazear (2000) and Bandiera et al. (2013). The work by Shearer (2004) regarding this issue is relevant. It figures out whether a piece-rate incentive model affects workers' performance. The research was conducted in the field. The company where the experiment occurred is a tree-planting industry in British Columbia, Canada. It employs around 90 planters a year. The core business was planting trees. On the whole, the workers' productivity depends on the degree of effort and the condition of the land. The process will take more time if there is hard or rocky ground. The experiment involved about 30 planters randomly chosen. In order to isolate the effect of the remuneration system only to effort and avoid the inclusion of the effect of ground conditions, it was necessary to keep planting conditions constant. Thus, the blocks chosen for the experiment were large enough to permit repeated observation of the workers while each compensation system was implemented. Every planter was observed in both compensation systems for at least two days. Furthermore, every block was worked under both compensation systems. Measuring the productivity of work like this is relatively easy. How many trees have been planted today? This is almost the only question worth asking. Output (trees planted) divided by time (hours worked). The average productivity of the workers in the experiment was 1,146.67 trees per day, with a standard deviation of 278.54. The result confirms expectations, and it turned out that workers were more productive under piece rate than under fixed wages. Under piece rate, the daily productivity was 219 trees more, which means a significant increase in productivity of almost 21%. Furthermore, due to this increase, unit costs decreased by 13% while planters earned more. The

piece rate allowed them to gain more since they provided a more extensive total output. These results are statistically significant[1]. In the same way, the work by Lazear (1996) adds substance to the efficacy of the piece-rates pattern as a tool to stimulate employees' performance. It concerns a field study set in a large American auto glass company. The focus was on the increase in productivity the management aimed to achieve after introducing a new compensation method. They moved the workforce compensation from hourly wages to piece rates. The company's core business concerns installing car windows; all workers work independently. The result was astonishing. An increase in productivity of 44% was reported as statistically significant after the 19 months of analysis. As in the case presented by Shearer (2004), the workers earned, on average, 10.6% more than before the switch (some workers could boast an increase in wages of up to 28%). The key result in this type of research is that the piece-rates model allows employees to reveal their abilities and the effort they are willing to make. Under hourly wage compensation, it is not worth it for the top productive workers to reveal themselves. Furthermore, evidence (Bandiera et al., 2005) shows that good-performing agents tend to make less effort if the hourly wage is set according to average productivity. This is because they do not want to impose on colleagues the negative effect their performance has on the average remuneration. According to the authors, this shows altruism within a social environment. Good workers fear that their high performance would harm average remuneration and, for this reason, tend not to perform 100%, proving altruism toward colleagues who work less quickly. We now see how there are at least two reasons why good workers prefer not to reveal their status. One is purely related to personal vantage. Why should they try to enable extra productivity that is not rewarded? The other reason concerns pure altruism and collusion with colleagues, especially if friends are alongside them (Bandiera et al., 2005). In this first section, we have shown how piece-rate incentive models can solve these problems. A piece-rates model can allow high-performance workers to prove their skills in a way that does not harm the reputation of other colleagues. In this sense, hardworking people are stimulated to engage more with the task, and in

[1] Bootstrapped standard error around 0.0185

doing so, they can gain more revenue and reputation. This is possible because piece rates allow for an effective separation of tasks and help to isolate interdependencies. It is a good tool for communicating with workers what they are expected to supply and indicating the right direction and where to move.

Virtues

As stated in the introduction, this book should delineate some guidelines regarding the incentive issue, which should help during the control system design. We have seen how the piece-rates remuneration model can help stimulate performance a great deal. Controllers can leave the process to their collaborators and evaluate them at the end of the day, the season, or even the year's end. There is no need to monitor every worker's action (that would be action monitoring). In this sense, piece rates leave full autonomy to the worker. The reward will be based on what they will have achieved, whatever the means they used to do so. Piece rates help even when it is unclear what the best way is. It would not be easy to delineate the exact actions a vendor should carry out to convince the potential client, for example. It would be better to leave the seller full autonomy (maybe accompanied by some tricks) and then evaluate him based on the final result he will have attained.

Flaws

We have seen how absolute incentives can be compelling and have several advantages. However, we should carefully consider some drawbacks before implementing these means.

First of all, there is the issue of setting targets. In an absolute compensation scheme, the rewards can be different. The first one links the remuneration to the number of tasks or the amount of work done. For example, a fixed amount of money per kilo of fruit could be picked (Bandiera et al., 2005). The worker reaches a higher level of remuneration only by picking more fruit. In this case, the wage is also fully proportional to the outcome. If the worker collects no fruit, the remuneration will be zero. If she collects ten kilos of fruit, the daily wage will be ten kilos

multiplied by the remuneration for one kilo, and so on. The second type is when the controller sets a target the worker needs to reach to get the prize. This is widespread among all organisations and is usually called a "bonus". In this case, the remuneration mechanism is slightly different. The workers get nothing until they fully reach the target and get a bonus when their outcome exceeds the target. Both these systems are well in use practically in every organisation, from the fruit juice company described by Bandiera et al. (2005) to the significant financial company CEOs, whose remuneration includes stock options and several other bonuses based on the achievement of the target (Fleckinger & Roux, 2012; Bhagat & Bolton, 2014), the bonus seems to be a widespread tool to stimulate performance. We find several drawbacks in these absolute incentives (Rates and targets). First of all, their implementation costs the company. Financial costs, on the one hand, and disadvantages associated with the atmosphere within the work environment, on the other. The increase in productivity should compensate for the expenditure on bonuses. If workers commit more to their jobs, the company earns more money, and the controllers share part of this benefit with the workers. Another drawback is that we can find dangerous side effects when defining the remuneration associated with one piece of work (for example, three kilos of fruit picked) or when we set the target the workers are expected to reach to get the bonus. The maximum achievable outcome is unknown. The maximum effort the worker can put into the task is unknown. Setting a piece associated with remuneration is difficult, but identifying a target can be almost impossible. There is always the risk that the target is suboptimal. This means workers would rarely keep working when the target is reached in order not to show that they could have done more (Gibbons, 1998). In some cases, the target is so low that all costs for bonuses are not associated with an increase in performance compared to the no incentive implementation scenario. Secondly, setting target difficulty depends on the complexity of tasks. Picking fruit (Bandiera et al., 2005), planting trees (Shearer, 2004) and installing glass in car windows (Lazear, 1996) do not seem to be highly discretional tasks. These researches provide solid evidence of the vital role of piece rate incentives. However, they can hardly be generalised to a broader range of businesses. This is because they are strictly restricted to the accessible types of tasks. Picking fruit, as

well as planting trees, is a task that needs neither strong cooperation nor interdependency among the agents. In other words, there is a strong correlation between effort and output. However, that is not all. The task should be easy to use a piece rate (Prendergast, 1999), and the output must be easy to measure. How many kilos of strawberries did a person pick today? This is very easy to evaluate. Evaluating the impact of public relations or marketing campaigns would be far more complex. Implementing a piece-rate incentive model based on outputs that are hard to assess precisely would be extremely dangerous. When there is high interdependency, it is very tough to discriminate between single contributions. Another vital feature of tasks such as picking fruit and installing glass windows is that the target is delineated and simple. The direction of interest is clear and single. The more fruit picked, the better it is. There is no uncertainty about what to do. Even the quality is not a big problem as the process is standard and there is an efficient way to do the job. When the target is simple, the communication process becomes easier since there is no risk of misunderstanding, and the company's goals can be directly transferred to the receiver (the workers in this case). If all these conditions are met, it will be possible to implement a piece-rates model with satisfactory results effectively.

In today's world, the tasks employees are expected to perform are heterogeneous and hardly match past micro-economical models. A large section of the population in Western countries works in environments where the company's targets are not unique and can sometimes contradict each other. A famous example in Italy is the introduction of piece-rate incentives within INPS (Italy's leading public social security institution). Managers decided to give a bonus to clerks in the debt collection office. Employees could claim a prize based on the amount of money they could get by processing the debt collection procedures. The result was that workers self-selected the most significant value procedures. By doing so, they did a tiny amount of work but could get the prize because the procedures selected were of high value. The low-value procedures (worth a great deal) were left aside, and nobody handled them for years. As a result, agents started to understand that the Institution would never claim small payables to the Inps. This encouraged contributors to ignore small

debts with Inps. Controllers, in this case, wanted to stimulate performance. However, they did not consider that the company's target (the Institution here) was not unique. One of the targets was maximising the total debt collection, but there were also things like the image of Inps, the number of procedures processed, etc.

Piece Rate Summary

To sum up (Table 1), in this first chapter, we have seen how piece rates work as performance stimulators under certain conditions, such as the presence of independent and measurable tasks. We have also shown the principal drawbacks. The principal ones are the target-setting process and the excessive emphasis only on the task in the object. Absolute incentives are unsuitable when tasks are complex, heterogeneous, interdependent and difficult to measure. In addition, this type of incentive may modify the organisational culture toward more self-interested and individual practices.

We have not considered the impact on the morale and culture of employees, but we will do so later on. We will also see how, in some cases, monetary incentives can have the opposite effect on performance and how the role of money as a motivator can be overrated.

Table 1: Piece rates advantages and disadvantages summary

Advantages	Disadvantages
Piece Rates **increase individual performances** (Bull et al., 1987; Paarsch & Shearer, 1999; 2000; Lazear, 1996; Lazear, 2000; Bandiera et al., 2013)	Under piece rates, the need to set targets and rewards emerges, and this activity can be complex and undefined (Gibbons, 1998). Setting targets and rewards, if low, can lead to a gain in productivity and efficiency. If it is too high, it leads to demotivation and even a decrease in performance.
Piece rates allow controllers to **manage at a distance and relieve** them from directly observing workers' actions (Ichniowski et al., 1997).	**Costs** associated with price rates incentives (Fleckinger & Roux, 2012; Bhagat & Bolton, 2014). Implementing incentives like piece rates can be costly for companies, and controllers must consider the positive effects on performance and productivity.
Alienation between individual and organisational interests (Bull et al., 1987).	When the **task is complex** and interdependencies high, it takes work to measure individual performance and outputs (Prendergast, 1999).
Piece Rates permit a sense of autonomy for workers (Lazear, 2000; Bandiera et al., 2013).	

CHAPTER 2

RELATIVE INCENTIVES

Instead of rewarding the single absolute performance of the agent, principals can set up a race to assign rewards. The distinction between absolute and relative evaluation is explained in this chapter.

While under absolute incentives what matters is only the single output, in the case of relative incentives, the evaluation of individuals considers the results of the others.

Piece rates are a typical example of absolute performance incentives. Only individual results are considered, and the performance of other participants (if any) does not affect individual evaluation. As analysed in the previous chapter, under specific conditions, the more effort the worker makes, the more he can earn under absolute incentive schemes. There may be interfering factors, which do not include the effort the other workers supply or the company's total productivity.

Relative incentives, on the other hand, base their approach on the fact that each individual's performance can be included in a performance distribution composed of all individuals involved in a particular task. The basic idea of relative incentives concerns that it is not an external entity that sets the target goal but that the performance distribution of all individuals operates as a benchmark for individual performance evaluation.

Implementing a relative evaluation system, such as tournaments, stimulates people to maximise their output relative to the performance of their colleagues. This type of incentive aims to promote individual performance by leveraging the competitive dynamic among individuals.

This chapter will explore the advantages and disadvantages of applying an incentive system based on relative incentives in light of recent management literature.

Tournaments

There are many examples of relative pay within relevant and innovative companies[2]. Salespeople, for example, are usually part of tournaments such as "the best vendor of the year", in which whoever sells the most (compared to the others) gets a good bonus (Fleckinger & Roux, 2012). "The Employee of the Month" award is another typical example (Syptak et al., 1999). Tournaments also generally award high job positions, putting them up for grabs for a group of employees (Gibbs, 1994; Kraus, 1996; Chlosta et al., 2014). In general, the insight here is that principals worldwide tend, in some cases, to plan evaluation in relative terms. The average performance can be used as a benchmark for evaluating all employees (Bandiera et al., 2005). Alternatively, a single or multiple prizes can be promised to the top performers. Sometimes, we see nothing but actual races set up by the principals within the work environment (Gibbs, 1994; Prendergast, 1999). These are usually designed as follows: the prize (money or promotion) is set as a reward for the best performer (or performers). The other participants get nothing or just a consolation prize. "The best vendor of the year" practice is common among big companies. Even the discovery of the Americas can be seen as the result of a tournament in which all the participants (European Countries) struggled to find the most efficient way to get to India and China (Morgan & Wang, 2010).

There are two main kinds of tournaments, only slightly different from one another: rank order and bonus tournaments (Kanemoto & McLeod, 1992; Bognanno, 2001; Krakel, 2003; Lazear & Oyer, 2004; Chlosta et al., 2014). In both types, a competition is put into action, but in a rank-order tournament, the prize is represented by a promotion, and in a bonus tournament, employees compete for a fixed sum.

[2] An interesting example is the one proposed by Fee and Hadlock 1997

Although they present some differences, the two types are similar since there is a monetary reward even in a promotion tournament, and salaries generally increase when going up in the hierarchy. The low performers are excluded from the prizes (Lazear & Oyer, 2004; Krakel, 2002).

In terms of effectiveness, both types of tournaments have been proven to be good stimulation tools in the same way. Krakel (2003), among others, finds no efficacy difference between the two systems when the participants are risk-neutral. Otherwise, one system may be more convenient according to the degree of risk aversion. We will examine this matter further when we concentrate on how national cultures can affect tournament-type choice and efficacy (Meyer, 2014).

Using relative measures, as shown, can lead to substantial negative externalities for colleagues. The fact that only the top performers get something in tournaments leads to strong negative externalities with which medium and low performers must cope. This is a highly negative aspect of relative incentives. Even the gratification of employees could be adversely affected.

Why use them? Three Benefits

The incentive power of tournaments has been studied intensely in the theoretical literature by Lazear and Rosen (1981); Nalebuff and Stiglitz (1983); Green and Stokey (1983); O'Keefe et al. (1984); McLaughlin (1988); Nieken (2010) Sheremeta (2013); Dechenaux et al. (2014). The empirical contribution is also vibrant on this issue, and one can find good works by[3].: Bull, Schotter and Weigelt (1987); Van Dijk, Sonnemans and van Winden (2001); Gneezy et al. (2003); Harbring and Irlenbush (2003); Szymanski, Valletti (2005); Falk et al. (2008); Niederle and Vesterlund (2008); Croson and Gneezy (2009) Delfgaauw, Dur, Sol and Verbeke (2013); Eriksson et al. (2009); Chlosta et al. (2014).

[3] Interesting review papers are those by Prendergast (1999) and by Dchenaux, Kovenock and Sheremeta (2014)

What is shown in these works is, firstly, that involving participants in a tournament boosts overall performance. The whole performance of a group of people working under a piece-rates system has been proven to be exceeded by the same people's overall output when a tournament is in play (Main et al., 1993; Gibbs, 1994; Nalbantian & Schotter, 1997; Gneezy et al., 2003; Harbring & Irlenbusch, 2003; Niederle & Vesterlund, 2007; Delfgaauw et al., 2013; Knoeber & Tsoulouhas, 2013; Connelly et al., 2014; Dechenaux et al., 2014; Connelly et al., 2014).

Secondly, tournaments can offset the significant disadvantage of absolute remuneration: difficulty in setting payment amounts and targets. All the challenges posed to controllers when setting targets and bonuses are overcome if they use relative incentives. Indeed, using relative incentive schemes can overcome the uncertainty of setting targets, which, as we have seen, could underestimate the workers' potential for information asymmetry (Drago & Turnbull, 1998). Tournaments, in particular, mean controllers do not have to worry about the target, as the bonus is set for the best employees (Nalebuff & Stiglitz, 1983; Gibbs, 1994). The average outcome will provide the benchmark for the workers' evaluation. It is not necessary to set an acceptable goal, given that the very performance of employees will fix it (Green & Stokey, 1983; Nalebuff & Stiglitz, 1983; Nalbantian & Schotter, 1997). The risk of rewarding luck is narrowed (Holmstrom, 1979; Fleckinger & Roux, 2012). Most of the time, the agents' effort is not directly observable (Fleckinger & Roux, 2012) or overly costly (Lazear & Rosen, 1981). The overall output will effectively show which participants have made more effort and which less.

The conditions under which the agents act are the same for all the participants, as are the shocks they will have to cope with (Grund & Sliwka, 2005). The only factors affecting the individual output are effort and personal skills. We will now investigate the role of effort and leave the discussion about personal skills for a deeper analysis of our work.

Third, monitoring costs are lower in a tournament: when a participant tries to cheat, the others are encouraged to report him; otherwise, they will be harmed (Bhattacharya & Guasch, 1985).

Why do tournaments work?

The literature suggests that tournaments increase overall performance (Main et al., 1993; Gibbs, 1994; Nalbantian & Schotter, 1997; Gneezy et al., 2003; Harbring & Irlenbusch, 2003; Niederle & Vesterlund, 2007; Delfgaauw et al., 2013; Knoeber & Tsoulouhas, 2013; Connelly et al., 2014; Dechenaux et al., 2014; Tihanyi et al., 2014). This should be why they are so popular among all companies. "The employee of the month" slogan has been used for decades in various companies.

The literature attributes this power in particular to the role of competition (Lazear & Rosen, 1981; Ehrenberg & Bognanno, 1988; Erev et al., 1993; Gneezy et al., 2003; Harbring & Irlenbusch, 2005; Vassileva & Sun, 2007; Niederle & Vesterlund, 2010; Harper et al., 2010; Fleckinger & Roux, 2012; Kosfeld & Neckermann, 2011; Connelly et al., 2014; Sheremeta 2013, 2015).

Humans gain utility by proving to others that they are powerful and active. In other words, we tend to put more effort into what we do if our result is compared to that of others. To use a more theoretical definition, our disutility, which arises due to the more significant effort needed, is balanced with a new kind of utility that comes from our enjoyment of beating our challengers (Bull et al., 1987; Lazear & Rosen, 1981). We gain utility in proving ourselves the best. In this sense, theory helps us understand why agents are willing to pay, in terms of effort disutility, to gain some utility supplied by competition.

The role of competition has also been proved through a more empirical lens. Several experiments have been conducted (Vassileva and Sun, 2007; Niederle & Vesterlund, 2010; Harper et al., 2010). In some cases, the monetary prize has been replaced with a non-monetary one to stress the role of pure competition between agents. In effect, if there is an amount of money for the best performer, we may think that agents make an effort to get the prize. They may be interested in the utility associated with the possession of a sum of money rather than with the competition. With no money as a target, the role of pure competition can be easily isolated. Moreover, the results are astonishing. Even without a tangible reward,

agents seem to be remarkably stimulated. Simply appointing the winner has a solid motivational effect on participants (Kosfeld & Neckermann, 2011). Practices, such as “the employee of the month”, “the golden subscription”, salesmen competing for a bonus, “the best student of our University”, etc., and essential experiments (Charness et al., 2010; Fehr & Falk, 2002; Bothner et al., 2007; Connelly et al., 2014) contribute to the confirmation of the insight that pure competition is an excellent factor in tournament-based incentives stimulation.

However, there is another factor which can affect workers’ performance. Effort is essential, of course, but that is not all. Indeed, results will also depend on our abilities (Ericsson & Charness, 1994). In other words, apart from effort, personal skills matter. Individual skills are related to personal capabilities in the task, propensity for risk, strategic tools, and the ability to gather information about the performance of others.

Competition skills are not required when absolute incentives are implemented. However, they become crucial when relative incentive schemes are set and workers are involved in a more strategic environment (Szymansk, Valletti 2004). The relevance of competitive skills in relative incentives can radically change the effects of incentives on stimulating performance (Drago & Turnbull, 1998).

Limits of Tournaments

Although tournaments are powerful instruments to enhance performance, their implementation brings several relevant drawbacks that should be considered.

The primary limits of tournaments are collusion, sabotage, cooperation, overconfidence, and constant feedback, which affect the tournament's implementation.

Collusion

Tournaments are implemented to enhance competition between individuals. However, what happens if participants collude together instead of competing?

When participants collude, they can avoid the disutility of the effort and still enjoy the same reward scheme. Controllers do not know the maximum average performance in advance, so the only indicator available is the result supplied by the participants (Green & Stokey, 1983; Nalebuff & Stiglitz, 1983). If workers underperform purposefully, controllers will have no means of proving their behaviour unfair. The performance distribution, which represents a benchmark performance under relative incentives, is distorted, and the average effort required of participants is lower than in truly competitive scenarios.

When colluding, participants risk that the others do not respect the deal and put effort into the task to win the prize (Bandiera et al., 2005). In this case, one of the participants gets a good prize even if he has yet to be the best worker. He or she is rewarded just because he deceives others, performing only slightly more than the threshold established. At the same time, the co-workers, thinking that collusion will prevent people from working more than agreed, underperform on purpose. If workers set up a collusion, they must be willing to take the risk that there may be somebody who fails to uphold the conditions. For this reason, collusion might appear inconvenient as it incentivises free riding (Green & Stokey, 1983).

From the implementer's point of view, if participants collude, there is absolutely no point in setting up a tournament (Nalebuff & Stiglitz, 1983). The prize is given with no performance improvement. If participants collude, tournaments lose their most powerful feature: competition. There is no competition if people agree on the output level to be achieved. Without competition, the very soul of tournaments will fade (Harbring & Irlenbusch, 2003).

It has been proven that, under some conditions, collusion may exist (Lugovskyy et al., 2010; Bandiera et al., 2005; Harbring & Irlenbusch, 2003).

Harbring and Irlenbusch (2003) studied how collusion is more likely where the number of participants is only two, while it appears nearly absent as the number increases. Lugovskyy, Puzzello and Tucker (2010) tested a similar environment. Their evidence is very near to the results of Harbring and Irlenbusch (2003). However, they find that repeated games are more prone to collusion if the number of participants is small. This is because only a few people get to know each other and become friends. Being friends seems to boost collusion (Bandiera et al., 2005). Furthermore, collusion may be seen as altruistic behaviour: people may underperform not to cast their friends in a bad light. Although Bandiera et al. (2005) found interesting evidence of this altruistic behaviour, the group they studied needed to be under a proper competitive tournament incentive. In many other studies, competition always seems to be more powerful.

However, these are exceptional cases, and the risk of collusion is usually very contained: people tend not to make a deal (Bhattacharya, 1985 e; Harbring & Irlenbusch, 2003; Herrmann & Orzen, 2008).

This evidence highlights that collusion is prevented because the perceived risk of cheating on others is high (Bhattacharya, 1985). In addition, competition is likely to prevail over cooperation and collusion. These insights can be differentiated from country to country and culture to culture (Herrmann & Orzen, 2008). Where individualism and competition are developed, collusion is extremely unlikely, whereas wherever cooperation and reciprocity are more robust, we may find a greater propensity to collude.

To sum up, controllers should monitor the possibility of collusion. However, in general, it does not jeopardise the tournament's efficacy. Competition seems to take precedence over every other incentive. The number of participants should be large enough to prevent collusion, and people bonded by friendship should race into separate groups.

Sabotage

Sabotage occurs when a participant practices action to reduce the others' output (Connelly et al., 2014; Messersmith et al., 2011). This represents a severe significant drawback of tournaments. Tournaments that undergo sabotage can turn out to be very inconvenient. Participants put effort into lowering the competitors' output instead of being committed to their jobs. Sabotage results in lower productivity and a tenser environment (Gibbons & Murphy, 1990).

There are several studies (Dye, 1984; Lazear, 1989; Gibbons & Murphy, 1990; Baker, 1992; Main et al., 1993; Gibbs, 1994; Harbring & Irlenbusch, 2008; Falk et al., 2008; Charness et al., 2010; Ch'ng, 2013; Ch'ng et al., 2010; Connelly et al., 2014) that show how people struggle to lower the target rather than reaching it. In other words, people spend energy trying to prevent others from doing well.

It has been shown (Lazear, 2000; Dye, 1984) how people are willing to spend tangible resources, not just time and effort, to lower others' performance. Lazear (2000) shows that people are eager to pay to undermine others. Some prefer to take resources away from their core activity, giving up part of their output to weaken the best performers.

It has also been studied (Falk et al., 2008) that when the prize is enormous, people tend to do whatever is in their power to get it. Interestingly, the study by Ch'ng (2013) claims that sabotage is far more likely when the difference in money between the high and low performers is high. To explain why humans behave like this, reason and emotion should be considered (Lazear, 2000; Gibbs, 1994; Baker, 1992; Bandiera et al., 2005). On the one hand, sabotage is a rational strategy to get a profit. From a purely selfish viewpoint, investing a sum of money with the likelihood of getting a bigger prize is a comprehensible and rational strategic action. If, for example, my outcome was 100 units and the others 120, why should I not "invest" 20 to lower the others' outcome to 65 and get the prize myself? Viewed rationally, this is perfectly understandable. For controllers, however, this is inconvenient for six reasons (Bandiera et al., 200,5; Gibbs, 1994). First, the benefit of tournaments vanishes into

suboptimal performance. Second, the environment is more challenging and tenser among co-workers. Third, good performers end up being highly demotivated. Fourth, the prize is given to someone who does not deserve it. Fifth, the incentive scheme appears extremely unfair and iniquitous. Finally, overall productivity ends up being lower.

On the other hand, humans are also powered by emotions (Roberts, 2005). Two different types of feelings might help us to explain sabotage. First, we find competitiveness. Being competitive not only means trying to run faster than the competitor but also winning the race at any cost. If people are competitive but incapable of winning the match, they will try to win anyway by sabotaging the opponent. This means that competition is so great that winning the race is worth even cheating. Once again, competition will prove itself very influential. Second, sabotage is a way to cheat ourselves and to self-convince that we are no worse than the others. People need reassuring phrases like: “In the end, even the best workers are the same as me”. The psychological foundations of this view lie in the fact that humankind needs to justify itself. People need to prove that it is not their fault if they do not reach targets that other people do.

To sum up, sabotage may occur within tournaments. For the above reasons, implementers should consider this possibility when implementing a relative incentive. To do so, they need to protect the high-performance participants from attacks by others. In particular, they should try to avoid big prizes when sabotage opportunities are present in the workplace.

Lack of Cooperation

As we have seen, competition is more robust in a tournament, boosting performance. However, what can we do if we need more cooperation? According to the studies by Lazear (1986), Drago and Turnbull (1988), Prendergast (1999), Herrmann and Orzen (2008) and Tokarchuk, Cuel and Zamarian (2012), a tournament should never be implemented if cooperation is being sought.

Nobody would be willing to help another participant as it does not increase their performance, but it does increase the competitor’s. In effect, people

are stimulated to use their competitive/strategic skills within a tournament. They are not supposed to be compassionate and cooperative (Herrmann & Orzen, 2008). The very engine of the game is precisely individualistic behaviour.

Adding cooperation (or "help", as Fleckinger and Roux 2012 call it) will supply the opposite incentives that would be inefficient from the principals' point of view. Furthermore, the incentive system would seem ridiculous and somewhat unprofessional.

Introducing group competition can stimulate team performance and cooperation (Nalbantian & Schotter, 1997). It has been studied that introducing competition between groups (group tournaments) incentivises people to cooperate inside the team (Nalbantian & Schotter, 1997).

Considering the concept of "task interdependence" (Fleckinger & Roux, 2012; Main et al., 1993), tournaments are suitable and valuable only when interdependence is low. To understand whether interdependence is high or contained, the work by Thompson (1967) can provide support.

Tournaments can be effectively implemented when tasks have low interdependence (Fleckinger & Roux, 2012; Main et al., 1993; Thompson, 1967).

In addition, tasks should be easily separable from participant to participant and should not bring negative externalities that might threaten the others' performance (Fleckinger & Roux, 2012). Differently from sabotage, which is intentional, the performance of some tasks could indirectly weaken others' performances.

In summary, relative incentives are unsuitable for enhancing cooperation when tasks are interdependent. The only way to get collaboration using tournaments is to implement competition between teams. In so doing, cooperation inside the team is enhanced, while competition among teams remains.

Overconfidence

Participants' level of overconfidence can affect tournaments' effectiveness and results. Tournaments (Fleckinger & Roux, 2012; B´enabou & Tirole, 2003; De La Rosa, 2011; Santos-Pinto, 2008).

Overconfidence bias consists of increased confidence in one's abilities due to random events (Santos-Pinto, 2008). For example, consider an investor who has put in some financial transactions and made a significant profit from them. On the strength of his or her results, the investor may believe that he or she is capable of venturing into less sound transactions, with the risk of losing his or her capital.

Overconfidence can represent either an advantage or disadvantage in tournaments.

Whether people are overconfident about their abilities, they may be willing to join in a race (or a tournament), feeling motivated by their perceived chances of winning (Larkin & Leider, 2012). In addition, it is easier (in terms of money) to convince overconfident people to participate in tournaments (Santos-Pinto, 2008; Larkin & Leider, 2012; Zoltners et al., 2006). In other words, controllers must pay less to stimulate overconfident people. They will accept a lower reward since they know their abilities (Santo-Pinto, 2008). Furthermore, overconfident people tend to care a great deal about their self-image. Controllers could use this feature to stimulate them to engage more to maintain a good image of themselves (B´enabou & Tirole, 2003; De La Rosa, 2011).

On the other hand, when overconfident people participate in tournaments, aggregated output is sub-optimal. This is because overconfident people are not, in fact, outstanding performers, but they only think they are. They are eager to participate in a competition, but the overall result is instead contained (Fleckinger & Roux, 2012).

Feedbacks

Some authors have explored the role of giving constant feedback during tournaments and the effects on outcomes (Bock et al., 2005; Eriksson et

al., 2009; Cuel et al., 2010; Larking & Leider, 2012; Bandiera et al., 2015; Mohnen et al., 2008; Vassileva & Sun 2007).

The majority of authors find there is a tight connection between the use of feedback and tournament performance (Bandiera et al., 2015; Bock et al., 2005; Cuel et al., 2010; Mohnen et al., 2008; Vassileva & Sun, 2007), while only a few studies argue the role of feedbacks to be negligible (Eriksson et al., 2009; Larking & Leider, 2012).

Among possible effects of feedback on tournaments, two are the most relevant.

First, if participants are informed about the others' scores, they are stimulated to engage more to catch up and overcome others, boosting overall performance (Bandiera et al., 2015; Bock et al., 2005).

Second, feedback on others' performances discourages low performers from committing since their chances to win are reduced (Larking & Leider, 2012).

Evidence (Eriksson et al., 2009) shows that the lowest performers do not stop committing even with feedback, and the top ones do not slacken off. This behaviour may suggest that competition is not the only explanation for commitment and that people maintain hope about events that may occur shortly.

In sum, the use of feedback is most relevant in ensuring the effectiveness of tournaments. However, special attention should be devoted to possible demotivating effects of feedback, especially when performance variance between participants is high.

Performance Variance

The literature agrees with the evidence that implementing tournaments significantly increases participant performance variance (Dechenaux et al., 2014; Kosfeld & Neckermann, 2011). When shifting from absolute to relative incentive schemes, the individuals' performance distribution chances into an unequal distribution of performance. Under relative

incentive schemes, low performers tend to perform even lower, while good performers significantly increase performance. This shared evidence suggests that the positive effect of tournaments on aggregate performance is the result of an unequal distribution of individuals' merits (Bull et al., 1987; Van Dijk, Sonnemans, Van Winden, 2001; Kosfeld & Neckermann, 2011; Brown, 2011; Dechenaux et al., 2014).

The effect of tournaments must be considered carefully when implementing this type of incentive. The following chapter (Chapter 3) is dedicated to presenting the state of the art of research investigating the motivations and possible solutions to this effect.

Tournaments summary

Table 2 summarises the main advantages and disadvantages of implementing relative incentives such as tournaments. This type of incentive scheme has significant potential in enhancing motivation and performance. The use of tournaments positively affects individuals' propensity toward engagement in the task. The output is significantly higher by eliciting competition than when absolute incentive schemes are implemented. In addition, relative incentives implement individuals' performance distribution as evaluation benchmarks, releasing controllers from the problem of having to set predetermined goals.

On the other hand, the chapter has shown that implementing tournaments brings a few non-negligible disadvantages. When tournaments are implemented, the likelihood of individual sabotage increases as participants use resources and energy to lower competitors' output. Cooperation between participants is modest and lower than other incentive schemes (such as group incentives). Indeed, tournaments increase competition more than cooperation. Collusion may occur; however, competition generally prevails. Overconfidence can reduce tournament efficacy and performance. The use of feedback could discourage low performers and lead to demotivation. Finally, tournaments increase the performance variance, bringing relevant impacts on individual disaggregated answers to this incentive scheme.