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„The architecture of work motivation:  
peering deeper into the interrelations of extrinsic and  
intrinsic motivation in the science sector.

A case study at the Faculty of Business, Economics and Statistics of the University of Vienna“

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## STATUTORY DECLARATION

I hereby declare to have written this master's thesis entitled "*The architecture of work motivation: peering deeper into the interrelations of extrinsic and intrinsic motivation in the science sector. A case study at the Faculty of Business, Economics and Statistics of the University of Vienna*" on my own, without having used other references and resources than the ones quoted. Thoughts from other resources having been integrated directly or indirectly into this thesis have been indicated as such. This thesis or parts of it have not yet been published or used in academic assessments.



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## LIST OF ABBREVIATIONS

CET	=	Cognitive Evaluation Theory
FJL	=	Faculty Journal List
JCR	=	Journal Citation Reports
MCT	=	Motivation Crowding Theory
NIS	=	New Israeli Shekel (currency)
SDT	=	Self Determination Theory

# 1. INTRODUCTION

What drives human beings to work? And, what does it take to motivate employees in order to further their talent and to stimulate them to perform as desired, so as to contribute to the organisation's success? These two questions could induce conflicting answers from employees and employers as the interests of these two parties can be divergent. The underlying assumption that human beings are influenced in their behaviour – and thus in their effort and performance – not only by themselves, but also by their environment (an idea derived from environmental psychology), demands the topic to be taken seriously by employers in pursuance of excellence and the success of the organisation. This raises the question: How should the environment be designed? Or, to put it differently, which measurements – with a focus on performance-based incentive schemes – should an employer implement to make the interests of employees and employers convergent and align their perspectives?

This has been a matter of concern for several decades in economic research – the search for an optimal design for incentive schemes. The relationship between incentives and performance is such that they are expected to enhance motivation, and consequently effort, resulting in an increase in performance. Thus, incentive systems are predicted to work successfully based on the assumption that people tend to strive for maximizing their utility (Jensen & Meckling, 1976, p. 308, 356; Lazear, 2000).

However, in emphasizing the relationship between incentives and motivation, this “unconditional” effectiveness of incentive systems from the classical economic perspective has raised concerns ever since the 1970s (e.g. Deci, 1971). Since then, a new element has been found to be of high relevance in the relationship between incentive systems and performance, namely “intrinsic motivation”, a type of motivation derived from one's interest in an activity, without the need for extrinsic incentives (Harlow H., Harlow M., & Meyer, 1950). This idea was not new: long before it was called intrinsic motivation, this element had already been mentioned in other subject areas, including literature where, in *The Adventures of Tom Sawyer* (Twain, 1998, p. 23, quoted after Pink, 2010), Mark Twain opined “*that Work consists of whatever a body is obliged to do, and that Play consists of whatever a body is not obliged to do*”, or that

*“There are wealthy gentlemen in England who drive four-horse passenger-coaches twenty or thirty miles on a daily line, in the summer, because the privilege costs them considerable money; but if they were offered wages for the service, that would turn it into work and then they would resign.”*

*(Mark Twain, in The Adventures of Tom Sawyer)*

Hence, the topics of intrinsic motivation and the possible negative effects of incentives on it have laid a foundation for various researchers from different disciplines to formulate ideas about how an incentive system would need to be perceived and the conditions to which an it should stick to in order to work out successfully.

The question then becomes: How should a successful performance-based incentive system be designed, taking into consideration the element of intrinsic motivation when evaluating the effects of the system?

Answering this general question will be the aim of this thesis, focusing on how an incentive system affects intrinsic and extrinsic motivation by looking at the Publication Premia Programme for researchers of the Faculty of Business, Economics and Statistics of the University of Vienna. The following is the specific research question to be answered:

*How does the Publication Premia Programme influence the motivation of researchers at the Faculty of Business, Economics and Statistics of the University of Vienna?*

The targeted approach is a comprehensive one, expecting that the system would have positive effects on motivation by integrating different theories and conditions from economic, sociological and psychological research.

This case study aims to reveal the factors affecting extrinsic and intrinsic motivation, especially those conditions that make an incentive system work out as intended. Moreover, the case study can help understand the interrelation between extrinsic and intrinsic motivation and how motivation overall is affected. The results could thus contribute to answering the question of how an incentive system can be successful.

In order to understand how the Publication Premia Programme influences motivation and how it is perceived by the targeted researchers, a qualitative research design was chosen:

young researchers, in particular, on the faculty were interviewed, supported by a partly-structured manual. The interviews were transcribed and analysed using qualitative content analysis, as suggested by Mayring (2010, p. 13; pp. 92-109).

To evaluate how, and possibly under which conditions, an incentive in the science sector can be successful, different perspectives on the topic of financial incentives were theoretically approached.

As part of this process, varying, and in some cases controversial, viewpoints will be presented in this thesis, originating in theories that were developed in the 20<sup>th</sup> century and have been scientifically studied for several decades. These theories and their developments will be described, leading to the presentation of colliding opinions about the ability of performance-based incentives to enhance motivation. As will be seen, the perspectives integrate different factors and ideas into the topic, especially concerning assumptions about problems that arise, motives and human behaviour. These differences create the possibility that the approaches may not include the relevant factors for evaluating the effects of the incentives on motivation, which might be necessary for the assessment of how the financial incentives can be successful.

These concerns will subsequently be addressed by considering the option of a harmonization of the relevant, conflicting ideas.

The structure of this thesis will be as follows: First, the classical economic view will be explained, with argumentation as to why incentive systems should be used. In addition, the development of the theory and the consequent problem areas will be discussed. Second, criticisms of the classical economic perspectives are outlined, which will help to identify the conditions required for an effective incentive system. Next, based on the theoretical arguments, the research case with its assumptions for answering the research question will be presented, followed by a section on the research methods applied when investigating the research case. After this, and after referring to the qualitative content analysis of the transcribed interview material, the results will be discussed, analysed and interpreted. Last, but not least, a summary of the relevant theoretical arguments, insights and results will be provided with regard to answering the research question, closing with concluding remarks on the relevance of the results of this research.

## 2. THEORY ON MOTIVATION

The theoretical section of this thesis is structured as follows: First, the economic perspective on motivation with its underlying theory will be examined; second, different perspectives on the topic will be taken into account, starting with the theoretical framework of intrinsic motivation that is derived from psychological research, followed by alternative economic research on motivation. Third, a possible functioning design for incentive systems will be presented. Finally, the case study with the respective research hypotheses will be presented.

### 2.1. THE ECONOMICAL VIEW: AGENCY THEORY AND BEYOND

To start with, the economic theory of and perspectives on motivation will be outlined: first emphasizing the underlying theory (and, in particular, its principles) and how it is regarded as the origin of the economic approach to the topic of incentives and motivation. Furthermore, to better understand the different views on the subject, the development of the theory, the problems identified in connection with it, as well as the focus of research on the topic will be explained to provide a coherent idea of the economic perspective and produce state-of-the-art insights.

#### 2.1.1. Agency theory: a brief introduction

The basic assumptions about incentive systems, which underlie contemporary perspectives in economics, have their roots in the early industrial era – when the quickest way of information delivery was still on the most powerful horseback or sailing ship (Osborne, 2007, pp. ix-x). By then, Adam Smith, in his book *The Wealth of Nations*, emphasized the advantages of specialization and labour division, while already addressing the related problems that arise when delegating a task to another person. In the case of owners of stock companies delegating tasks to their managers, he noticed that it makes a difference between managing the money of other people, and one's own (Smith & Wight, 2007, pp.

482-483). This implies that costs can be created for the principal delegating a task to the agent. This problem was of no importance for economic analysis until the late 1960s, when major developments were made in the areas of, for instance, property rights and the economics of uncertainty, bringing these “agency problems” to the fore again. This has, in turn, given rise to agency theory, often also called “principal-agent theory”, which has found its way into present-day microeconomics (Linder & Foss, 2015, p. 344). This theory is seen as relevant to the ordinary employment situations in organizations, for example, between a CEO and employees, or also between a shareholder and the CEO.

The theory deals with two parties in a situation of mutual trade: one party (the principal) is in the position of delegating a task to a second party (the agent), whose decision about acting or exerting effort influences the outcome and, consequently, the gains of both of them.

As the elementary assumptions of the theory imply that both parties will opt for the best solution for them individually and, hence, for them to be rational, self-interested and to strive for maximizing their utility, their interests can be divergent (Jensen & Meckling, 1976, p. 308; 356). This could apply to many different situations, for example, the interests of shareholders to maximize their returns, which can tremendously deviate from the personal interests of managers. The time horizons for planning of these two parties can also diverge (Baker, Gibbons, & Murphy, 1994, pp. 1125-1126; Hölmstrom, 1979). Another concern is the possible difference in risk preferences between the two parties, where the agent decides on and acts upon the degree of risk sharing between them (Grossman & Hart, 1983, p. 7). These examples of possible conflicting interests suggest that the resulting behaviour of the agent might not always be in the principal’s favoured interests. The theory further suggests that this may not be problematic until information asymmetries arise between the two parties – that is, if information is not distributed evenly (Linder & Foss, 2015, p. 344). Such an asymmetry can arise when the principal has less information than the agent either *ex ante* (meaning that, for instance, when an agent applies for a job, he or she may not reveal all personal characteristics – so called “hidden information” – to the principal), or *ex post* (that is, when the agent, aiming at maximizing his or her payoff, performs an activity or task differently from what was expected from him by the principal – so called “moral hazard”). This situation occurs when the principal cannot observe the effort or action of the agent or does not have enough background information about the task itself (Hölmstrom, 1979, p. 74). Focusing on the hidden information problem, with the assumption of agents being rational and in favour of



maximizing their utility, they should respond to extrinsic rewards. Therefore, in order to reward productive work, prevent ex post information asymmetries and reduce the risk of agents deviating from the behaviour desired by the principals as a result of diverging interests, incentives can be used. As effort is difficult to observe, the agent's wage is proposed to be measured according to the observable output of the agent's work (Jensen & Meckling, 1976, p. 308; Holmstrom & Milgrom, 1991, p. 24; Grossman & Hart, 1983; Hölmstrom, 1979). Although in the case of financial incentives, this allocates risk to the agent, which can be undesirable for a risk-averse person (Holmstrom & Milgrom, 1991, p. 24), this theory postulates the use of extrinsic incentives to be salient in motivating employees and therefore boosting their enthusiasm for increasing their work effort (see e.g. Jensen & Meckling, 1976, p. 308; Lazear, 2000; Prendergast, 1999).

However, the theory has since been developed further, and economic researchers have identified various problems in connection with financial incentive systems. The following section elaborates on this in more detail.

### 2.1.2. Economic theory in time

Based on the previous explanation, employees can be motivated by incentive systems. This also implies that there difficulties can emerge in the principal-agent relationship, which have been researched since the 1970s, in connection with the search for incentive system designs that integrate the concerns and prevent the problems.

During the years prior to 1991, agency theory focused mainly on weighing up insurance and incentives (Gibbons, 1998, p. 115), which placed emphasis on the problem of allocating risk to the agent (specifically, their duty of bearing the risk), and on firms reducing the extent of incentive contracts in order to decrease the exposure of risk-averse employees to output variation (Baker, 2000, p. 415). This remained the main focus of agency theory, even though proposals of highlighting other factors in connection with the theory had already been made as early as in 1975. That year, Steven Kerr (1975) published the paper "On the Folly of Rewarding A, While Hoping for B", where he concluded, based on interdisciplinary cases (e.g. universities, rehabilitation centres or the political sector), that incentives do work, but if inappropriate performance measures are used, they can

have various detrimental consequences. About 15 years later, in the 1990s, this idea was picked up again (e.g. by Holmstrom & Milgrom, 1991; Baker et al., 1994) and its problems have been investigated ever since.

### 2.1.3. Problem areas

The two main concerns linked to the use of improperly designed incentive systems (and thereby, of distorted performance measures) are being briefly described in the two following subsections.

#### 2.1.3.1. *Undesired behaviour*

As was already recognized by Steven Kerr in 1975, performance measures for ideal incentives have to be designed properly in order to work and to evoke the intended effect. Otherwise, these objective performance measures will result in undesired behaviours by the agents, such as gaming or non-collegial actions, or other behaviours negatively affecting the firm's success (see e.g., Baker, 2000, p. 415).

One example of gaming is the case of the H. J. Heinz Company. In this company, managers were given bonuses based on earnings growth compared to the prior year, which they yielded by changing delivery times to their customers and by conducting prepayments though the service had not even been delivered. Thereupon, the company's flexibility for future businesses was weakened (Post & Goodpaster, 1981, quoted after Baker et al., 1994, pp. 1125-1126). Similarly, at Wells Fargo & Co., an American retail bank, employees opened fake customer accounts (3.5 million of them), which the customers did not know about, in order to meet sales targets – yet another, more recent example of a scandal provoking public outrage and having devastating effects for the firm (Glazer, 2017).

#### 2.1.3.2. *Multitasking situations*

In addition to attempting to construct incentive systems with the aim of preventing agents from exploiting the situation when trying to maximize their personal gains, principals should contemplate the situation of multitasking. Employees usually have to do more than

just one task. This fact was integrated into the debate about agency problems in the 1990s, focusing on the agent's time allocation for the different tasks and the possibility of agents neglecting other tasks when only one task is incentivised (Holmstrom & Milgrom, 1991; Holmström, 2017, pp. 1765-1769).

An exception to these problems seems to be an application of a piece-rate compensation system, as being proposed by Lazear (2000), who analysed data from an auto glass company that switched from an hourly wage-based compensation system to one depending on piece rates – hence, to a performance-based system. Within a period of 19 months, this change led to an increase in output per worker of 44 percent, while the workers received higher pay in return (Lazear, 2000, pp. 1346-1347).

Besides these examples, distorted performance measures are common, and a list of cases would be quite long (Baker et al., 1994, pp. 1125-1126). This suggests that incentives are effective as long as they enhance an agent's utility, with the basic assumption that they increase motivation and performance. However, as explained, problems can arise from the use of performance-based incentive systems, and thus economic research has been occupied with finding optimal designs for incentive schemes in order to prevent these problems, especially with regard to the extent to which they should be used and to how they should be measured.

Nevertheless, although economists have recognised the importance of properly designed incentive systems, the classical economic perspective of using incentive systems to extrinsically motivate employees and raise performance has attracted criticism, which was triggered by psychologists in the 1970s. This criticism questions the positive effects of incentives, as well as whether and how to use performance-contingent incentives. The following section will provide insight into the content of the criticism that was first raised by psychological research, before having become an issue for some economists, too. Attention will be drawn to the concerns of both perspectives with regard to the classical economic view.

## 2.2. CRITICISM OF THE CLASSICAL ECONOMIC VIEW

Criticism of the classical economic view of incentives has its origin in psychological experiments of the late 1960s and 1970s (Gagné & Deci, 2005, pp. 331-333; Deci, 1971), albeit the idea of questioning the use of extrinsic rewards had existed much longer. In fact, an experiment in the 1940s (Harlow et al., 1950) had sowed the seeds for later research on this matter, sending the message that humans are not only driven by biological mechanisms, nor only by extrinsic motives, but also by something else – something that goes beyond extrinsic motivation – namely, *intrinsic motivation*.

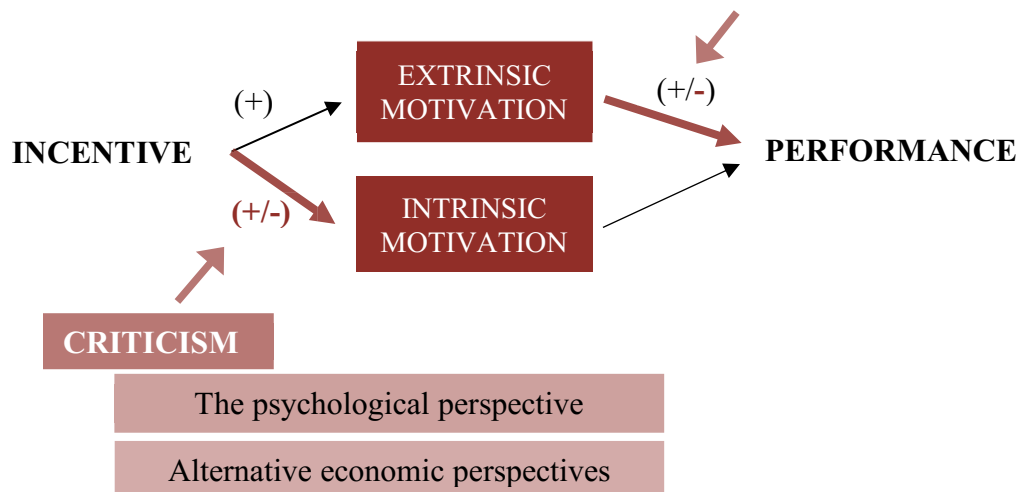
Extrinsic motivation in this context can be described as the urge to do an activity in order to achieve a positive outcome, such as receiving an incentive or protecting oneself from a negative outcome such as a punishment (Olafsen, Halvari, Forest, & Deci, 2015, p. 447). The incentive systems referred to in the previous chapter are considered to boost extrinsic motivation. These different and extending perspectives on what motivates human beings will be elucidated in the following sections; first by focusing on this “new” drive – intrinsic motivation – which is the basis for criticism of performance-based incentive systems, and then by exploring further criticism, coming from other disciplines, of the classical economic connection between incentives, motivation and performance.

To show how this criticism is being linked to a framework of motivation and behaviour, Figure 1 illustrates an extended, but very simplified, version of the classical economic model, with the new element – intrinsic motivation – integrated into the framework, reflecting the criticism concerning the unconditional effectiveness of the classical links and suggesting a broader approach as being conducive to a clearer understanding of what motivates people. The second arrow indicates the possibility that extrinsic motivation is capable of decreasing performance (e.g. Ariely, Gneezy, Loewenstein, & Mazar, 2009, pp. 452-454), even though the incentive has a positive effect on extrinsic motivation. This is called “choking under pressure”, an occurrence either through a rise in arousal or the change of the process from “automatic” to “controlled”, as when attention is drawn to the own action in a conscious manner, impeding the automatic nature of doing a task (Baumeister, 1984, pp. 610-612). Implications of this effect also include possible detrimental impacts on creativity (e.g. Amabile, 1979; 1983), short-term thinking (e.g. caused by goal setting: Ordóñez, Schweitzer, Galinsky, & Brazerman, 2009, pp. 6-9), or the triggering of unethical behaviour, as was seen above in the case of the managers at the H. J.

Heinz Company (Post & Goodpaster, 1981, quoted after Baker et al., 1994, pp. 1125-1126).

However, this phenomenon is not within the sphere of interest of this paper, as the focus here is put on the first connection, between performance-based incentives and motivation, especially with respect to how criticism proposes to cope with it.

**Figure 1:** Criticism of the classical assumption



Source: Own illustration, e. g. after Deci (1971), Gagné & Deci (2005), Frey & Jegen (2001), Ariely et al. (2009)

First, the foundations for criticism of the classical model – namely, intrinsic motivation – from both, the psychological and the economic perspective, will be introduced.

### 2.2.1. The psychological perspective

The psychological approach towards incentive systems is based on the theory of intrinsic motivation, which has led to the development of two further theories.

#### 2.2.1.1. *Intrinsic motivation: the inception*

In the 1940s, a psychology professor at the University of Wisconsin, Harry F. Harlow, was experimenting with learning effects using monkeys, when he discovered that the monkeys solved a puzzle without any extrinsic reward. They did this repeatedly and improved within several days. The monkeys were not taught how to solve the puzzle and they did not get any rewards for succeeding in doing it. As this behaviour was not

biologically driven (they did not get food in return for solving it) nor was it rewarded extrinsically, he concluded their behaviour to have been driven by an intrinsic drive, which he finally named “intrinsic motivation” – a motivation derived from the plain interest in the task, without any extrinsic trigger (Harlow et al., 1950).

His idea of this third drive remained dormant for about two decades. Finally, in the late 1960s, the psychology student Edward L. Deci seized on this very topic in his dissertation, using an experiment with university students held successively on three days, with each session lasting one hour. During each session, the participants had to try to replicate, with the puzzle pieces of a Soma cube, four different configurations – drawings of which were shown to them – while their time was being tracked. While the format of the sessions was the same, the experimental group received a monetary reward for every configuration solved only in the second session. During every session, there was an eight-minute in-between break where he pretended to type the data into a computer. Deci instead watched them whether they were still playing with the puzzle or doing something else, like reading the newspaper. The results indicated that, although the time spent on playing during the break increased in the second session for the experimental group (while it was approximately the same as in Session 1 for the control group), in Session 3, when the monetary reward was removed, the time spent on playing fell remarkably for the experimental group – with no decrease for the control group. These results implied that the participants in the experimental group lost their intrinsic motivation for performing the activity, but only after the reward had been withdrawn (Deci, 1971, pp. 108-110; Pink, 2010, pp. 9-11). This negative effect on intrinsic motivation firstly suggested the need to further dedicate research to the topic of intrinsic motivation, and implied that intrinsic motivation would not affect behaviour only in addition to extrinsic motivation, but would rather be interactive with it, in either a positive or a negative manner (Gagné & Deci, 2005, p. 332).

#### *2.2.1.2. Cognitive Evaluation Theory (CET)*

This undermining effect of external factors on intrinsic motivation was explained as a decline in feelings of autonomy, a shift from internal to external concerning the “perceived locus of causality” (DeCharms, 1968, quoted after Deci, 1971, p. 105), which could also work in the opposite direction with an enhanced feeling of autonomy. Moreover, within this process, perceptions of autonomy and competence were presumed to

increase intrinsic motivation – assumptions that were incorporated into the cognitive evaluation theory (CET) (Deci, 1971, pp. 105-108; Gagné & Deci, 2005, p. 332-333).

This theory, along with its basic suppositions, aroused debates and replication studies of the experiment in different settings in order to either support, extend or reject the findings of the first study (e.g. supported by Lepper, Greene, & Nisbett, 1973). In 1999, a study evaluating 128 experiments (a meta-analysis) supported the effect of the undermining of intrinsic motivation by tangible rewards such as performance-based ones, while positive feedback was found to have a positive influence (Deci et al., 1999). Furthermore, intrinsic motivation was linked to positive consequences such as creativity (e.g. Amabile, 1983; Amabile, Conti, Coon, Lazenby, & Herron, 1996.), performance (e.g. Baard, Deci, & Ryan, 2004), and well-being (e.g. Gagné & Deci, 2005, p. 337).

### 2.2.1.3. *Self-Determination Theory (SDT)*

In wake of these findings, CET gained attention for organizational research in the 1970s and at the beginning of the 1980s. However, interest in CET waned quickly, for the following reasons: First, most studies involving CET were of laboratory origin, rather than carried out in “real-world” organizations. Second, in order for intrinsic motivation to be undermined, it has to exist beforehand. As this does not account for all tasks in organizations, strategies should not be based solely on increasing intrinsic motivation. Also, the theory would induce managers to set initiatives either to foster extrinsic or intrinsic motivation, instead of using a complementary approach. Yet another reason for the waning interest in CET is that it seems logical to use financial rewards, as most people work to earn themselves a living (Gagné & Deci, 2005, p. 333). Consequently, this has led the same psychologists to develop the theory into one permitting the consideration of how to stimulate both types of motivation, rather than just one. Self-Determination Theory (SDT) assumes an internalization of the external incentives, being capable of influencing extrinsic motivation in that it can be autonomous, providing the prerequisite for incentives that can avoid resulting in detrimental effects. This accounts for incentives only in the case of causing *autonomous* motivation (encompassing a feeling of choice), in contrast to when they are perceived to be *controlling*, which connotes actions motivated by pressure – a sense of “having to” act (Deci & Ryan, 1980, quoted after Deci & Ryan, 2000, pp. 227-233; Deci & Ryan, 2000).

Thus, with these findings, the first experiments to cause negative effects on motivation are referred to as activating controlled motivation (Gagné & Deci, 2005, p. 334), underlining the significance of incentives having to be internalized and induce a sense of autonomy, resulting in self-determined behaviour.

### 2.2.2. Alternative economic perspectives

Despite having been a controversial issue from the start, based on the psychological studies, intrinsic motivation has also been adopted by researchers in economic disciplines and integrated into new theories, and thereby, as mentioned earlier, the classical economic link between incentives and performance has been criticized.

In economic theory, the negative impact of incentives on intrinsic motivation is truly an anomaly, as it questions the long-lasting economic “law” of incentives increasing supply. The standard theory does not divide motivation into different forms, and therefore intrinsic motivation is only, if at all, regarded as an exogenous constant. In addition to that, it is difficult to decide which aspects of the motivation of an employee can be attributed to the intrinsic type, and which ones not. Furthermore, it is assumed to be easier to influence extrinsic motivation than intrinsic, given the large number of available extrinsic tools or motivators (Frey & Jegen, 2001, p. 590). These conditions indicate why many economic studies do not integrate intrinsic motivation into their models, though some economic researchers such as Gibbons (1998, p. 130) also emphasize the possibility that incentives and common management systems can have negative effects on “non-economic realities”, by it also relating to intrinsic motivation.

Nevertheless, following the conclusions made by psychological researchers on the undermining effect of incentives on intrinsic motivation, empirical studies have been conducted in order to test this effect in different settings. Some important studies are outlined below.

#### 2.2.2.1. *Empirical findings*

At about the same time that psychology published its studies on intrinsic motivation, social science literature also reflects the discovery of the effect. In 1970, Titmuss (quoted after Frey & Jegen, 2001, p. 589) claimed that a remuneration for donating blood would erode social values and, in turn, decrease people’s willingness for it. Although he could not seriously support his proposition empirically, his claim still triggered discussions.



Upton (1973, quoted after Frey & Jegen, 2001, p. 607) found empirical evidence for the phenomenon suggested by Titmuss: those who were not paid for donating another time donated more.

### **The NIMBY Project**

In 1993, the Swiss government planned to construct nuclear waste repositories. One week before the real referendum on whether to build these amenities or not, two thirds of the households of potentially affected communities were interviewed. Such a social project, which can be locally undesirable, is referred to with the phrase “Not In My Backyard (NIMBY)”. The results showed that people were less to support the construction when they were offered money as a compensation for having the facility in their neighbourhood. With these results, Frey and Oberholzer-Gee (1997) emphasized the importance of re-thinking incentives in cases where intrinsic motivation proves to be relevant, such as the Swiss case powered by the motive of civic duty, or the previously described cases regarding blood donations (Frey & Oberholzer-Gee, 1997, pp. 748-753).

### **Donation collection**

Another experiment by Gneezy and Rustichini (2000a) examined a donation collection situation, which was part of a programme in Israel at a yearly basis in order to collect money to be donated for cancer research. At the time, high-school students collected money in pairs by going from house to house. For the experiment 180 students participated. In the first treatment, they were told about the significance of their activity for society and that there would be a publication of the amounts they managed to collect. In the following treatment, they were told to receive 1% of the total amount they could collect as a pair – which was communicated to them to being money from an extra fund, which would not be deducted from the collected money. In the third treatment, this percentage increased to 10%. The results indicated that the highest amounts were collected in the first stage, with a drop under the second treatment, and a rise again under the third one. However, the amounts collected did not increase up to the level achieved under the first treatment (Gneezy & Rustichini, 2000a, pp. 798-800).

### **The IQ-Test**

Yet another experiment being contained in the same paper was an IQ-Test – a field study at the University of Haifa, where students were told to receive different payment amounts

for answering the questions correctly. They were divided into four groups: the first one was not told of any additional money; the other three groups were offered additional payments of different amounts. The ones additionally receiving 10 cents per correct answer performed more poorly than the ones receiving nothing, though the ones getting either one or three NIS (New Israeli Shekel) could answer more questions correctly than those getting no additional payment (Gneezy & Rustichini, 2000a, p. 796).

Both experiments show the tendency that the higher the compensation, the better the performance, although when comparing no compensation and a payment, the latter one – the payment – results in a decrease in performance. This effect of introducing a small payment is described provoking a change in perception, causing this negative effect on effort (Gneezy & Rustichini, 2000a, pp. 802-803).

### **Fine for delay**

In addition to monetary compensation, another type of extrinsic tool intended to modify behaviour is penalties. Gneezy and Rustichini (2000b) conducted another experiment observing the effects of the introduction of a fine imposed on parents for collecting their children late. Over 20 weeks, 10 children's day-care centres were observed. For the first four weeks, the number of parents coming late was merely counted. In the fifth week, an introduction of a fine for coming at least 10 minutes too late in six of the centres followed (four of the centres served as control group). The fine caused more parents to arrive late. When the fine was removed, the number of parents arriving late did not change any more, being and remaining above the number observed before the fine had been introduced. Following the reasoning used to explain the results at the University of Haifa above, these findings can be interpreted as reflecting a change in the perception of the situation, or, more specifically, of the according environment. This type of situation is referred to as being a situation of an incomplete contract, where no specific clauses were fixed between the two parties, leaving space for the parents to respond (Gneezy & Rustichini, 2000b, p. 3).

The above addressed studies present different cases of an undermining effect on intrinsic motivation in which different motives were crowded out, such as social values, civic duties, volunteer work motivation, or norm adherence. In this connection, fairness and reciprocity could also play a role in modifying motivation and behaviour (Fehr & Gintis, 2007; Clark & Oswald, 1996).

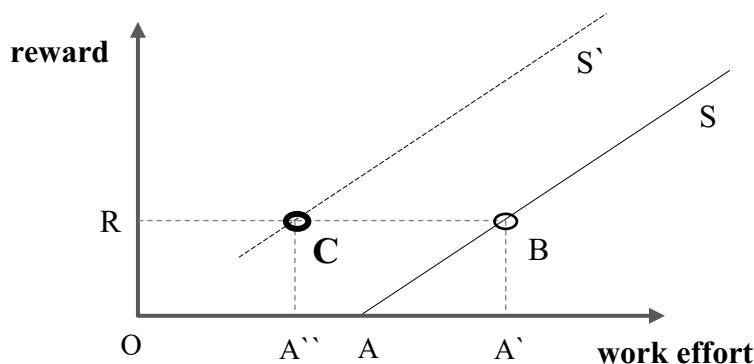
### 2.2.2.2. Motivation Crowding Theory (MCT)

After many empirical findings of the negative impact of incentives on motivation, similar to the early undermining effect on intrinsic motivation that was introduced by the psychological researcher Deci (1971), the economists Frey and Jegen (2001) picked up the idea and formulated the Motivation Crowding Theory (MCT). This theory suggests that there can be an influence on intrinsic motivation either by increasing it (crowding it in) or decreasing it (crowding it out). There are two main possibilities for explaining movement in one of these two directions:

- *a shift in preferences*: as preferences can be considered dependent upon a state, incentives can change that state (e.g. Bowles & Poanía-Reyes, 2012, p. 372);
- *a shift in perception of the task itself, of the perception of one's self, or of the environment*: this concept does not violate the standard economic understanding of fixed preferences, being modelled by Bénabou and Tirole (2003), as incentives affecting the state of information of an agent about a task and its nature, in this way, affecting intrinsic motivation.

To show this crowding-out effect graphically, Figure 2 illustrates the linear supply curve  $S$  in its traditional way, assuming that effort increases with an increasing reward.  $R$  depicts the reward being implemented. It underlies the classical economic assumption that when rewarding for completion of a task and thus financially incentivizing the task (from  $O$  to  $R$ ), effort increases from  $A$  to  $A'$ . However, in the presence of the crowding effect, the curve  $S$  moves to the left, to  $S'$ , meaning that a reward  $R$  results in point  $C$  and, thus, only in work effort  $A''$ . This graph was drawn based on the study of donation collection presented above (Gneezy & Rustichini, 2000a; Frey & Jegen, 2000).

**Figure 2:** Crowding-out effect



Source: Own illustration after Frey & Jegen, 2000a, p. 594

However, what can be seen here is that, in line with the developments made in psychological research, economists who criticise performance-based incentives do not criticise their use per se, but rather how they are designed and used, and they have investigated the conditions incentive systems should fulfil in order to work properly (e.g. Frey & Jegen, 2000a), based mainly on the perception of the task.

### 2.3. APPROACHES TO A FUNCTIONING INCENTIVE SYSTEM

Where classical economic theory as well as its critics agree on, is on the objective of incentivizing, namely to enhance motivation, and that performance-based incentive systems can work. This is, for example, shown by the prior description of the development of psychological theory from CET to SDT, distancing itself from a pure view of incentives having negative effects on intrinsic motivation and moving on to a formulation of how they are perceived and that they are capable of having positive effects on motivation (Gagné & Deci, 2005). Following this, Frey and Jegen (2001) elaborate on the possible crowding-out effect, with putting focus on the necessary state of perception. Hence, the criticism does not neglect the possible positive link between incentives and motivation, but demands conditions under which an incentive will work, which are distinct from the ones being contained in research on agency theory, which was addressed earlier.

The question of how incentive systems can work remains, especially when considering the different approaches to seeking answers to this question. First, economic research deals with the problems arising from agency theory and with possible solutions, which primarily concern ways of designing incentive systems, and thus, the preconditions for their construction. However, differences also arise in this respect, as literature offers conflicting suggestions as to matters of **design**, which will be addressed in a later section.

As this only concerns the main question of how to create the system (with the aim of preventing the negative consequences of incentives, such as undesired behaviour), another aspect should be addressed: the perspective of the ones at whom the incentives are aimed (the employees) – how they perceive the incentives, and which **conditions** could play a role in determining the effects of the incentives on them.

### 2.3.1. Design: Perspectives in conflict

Concerning the question of designing incentive systems, incentive intensity as well as performance measurement are issues that have been identified as significant preconditions for a functioning system. The classical economic view clashes with the critical ones especially in terms of the level of intensity – though, a discussion follows. Proposals for optimal performance measures are outlined in the following sections.

#### *2.3.1.1. Incentive intensity*

Attaching to the results of the two studies that were conducted in Israel, the positive effects on effort of the payments only seem to occur when the compensation is relatively high. When the payments are low, it negatively affects intrinsic motives through a change of perception of the environment. It suggests, like in the title of its publication paper, “Pay enough, or don’t pay at all”, to use high payments (Gneezy & Rustichini, 2000a). Connecting to this, also low fines were observed to cause the same effect in case of the children’s day-care centres (Gneezy & Rustichini, 2000b).

However, these studies in Israel with the IQ Test, the study of the donation collection and the one with the day-care centres are not an organizational nature, thus, the meaning of incentives and fines could be different in organizations.

Moreover, economic studies have shown that high-powered (in sense of their level) incentives are likely to reinforce the “multitasking” problem, thus it could cause employees to neglect other tasks that are not being incentivised. This, in turn, could influence time allocation and the overall contribution of the employee to the organisation’s success (Holmström, 2017, p. 1765). Moreover, high-powered incentives could be especially problematic in settings with a high level of cooperation among employees, as they are likely to promote rivalry between employees (Lazear, 1989, p. 562).

Further to this, as having dealt with in the first section, incentives can cause agents to behave in a way that is undesirable from the firm’s perspective, i.e. when the agent takes personal advantage of the situation.

#### 2.3.1.2. *Performance measurement*

This could also be a reason for not implementing high-powered incentives, as well as it implies that adequate performance measurements should be used in order to prevent behaviours such as gaming. Research on methods for this suggests a combination of objective and subjective performance assessments to be optimal. This means using quantifiable, as well as subjective (qualitative) components (e.g., Baker et al., 1994; Gibbons, 1998). A shining example of the complementary use of both aspects is the welding products manufacturer Lincoln Electric: in addition to applying a piece-rate compensation system – an objective performance measure – the other half of the pay of a worker depends on a bonus system, which is based on a review by the management of subjective measures, such as innovation or cooperation (Fast & Berg, 1975, quoted after Gibbons, 1998, p. 120).

#### 2.3.2. Conditions

Alternative perspectives on the effects of incentives consider the individual concerned and how the incentives are perceived, instead of aiming at the design itself, but which could have the potential of also being of importance for matters of conception of the system. In addition, possible other factors that could influence the motivation are gathered.

##### 2.3.2.1. *Utility*

As one of the core principles of agency theory, the classical economic perspective assumes humans to have an urge to maximize their utility, and this principle is incorporated in agency theory modelling (e. g. Hölmstrom, 1979, pp. 75-80). With this being the basis for the presumption of the link between incentives and the motivation to work, this is the first factor that needs to be integrated and possibly incorporated into the framework to be developed in this study.

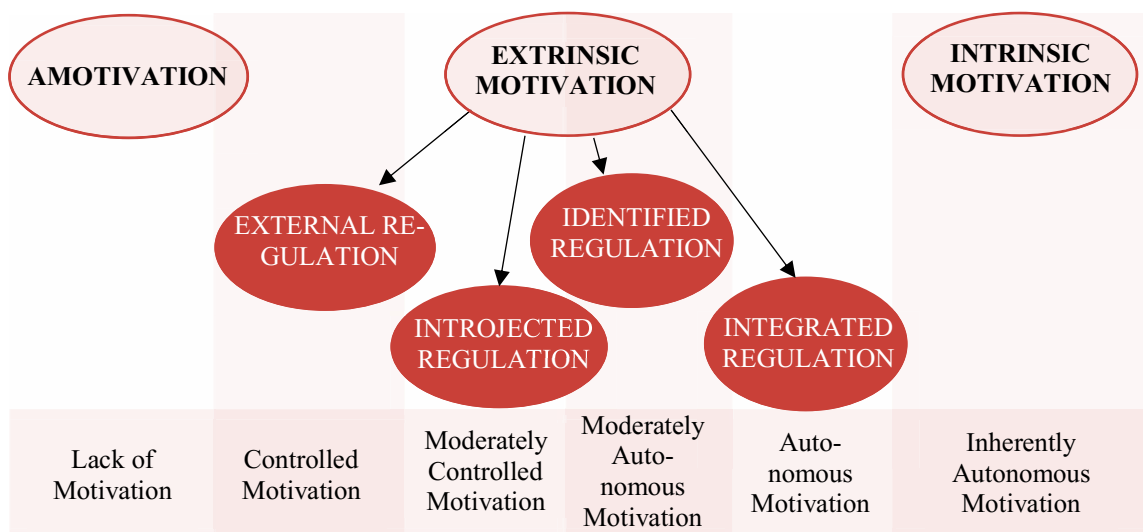
### 2.3.2.2. Perception of support

Extending SDT and MCT from the above sections, in this sense the concepts of autonomy (from the psychological path) and support perception (from the economic perspective) are considered.

#### Autonomy

The later definition of SDT postulates motivation to be either autonomous or controlled, with autonomy being described as acting determined by someone's own volition and choice. Intrinsic motivation is always classified as autonomous. With extrinsic motivation, it depends on the degree of internalization whether it is autonomous or controlled, which is shown in Figure 3. *External regulation* occurs in case an action is only carried out when longing for a specific result or consequence or when trying to avoid one, for example, "I work when the boss is watching". *Introjected regulation* is still considered a type of controlled motivation, as the external incentive controls behaviour when self-esteem depends on the performance involved. When the regulation and its respective values are internalized, extrinsic motivation can also become autonomous, as defined by the types "identified regulation" and "integrated regulation", describing states when people feel the regulation to be in line with their own goals, becoming even stronger when they fully identify with it and perceive the regulation to be part of their own selves (Gagné & Deci, 2005, pp. 333-335).

**Figure 3:** Stages of controlled and autonomous motivation



Source: Own illustration after Gagné & Deci, 2005, p. 336

Concluding from this framework of self-determination, it emphasizes on the importance of autonomy and how an external regulation can be perceived as autonomous. This is rooted in research on need satisfaction, as being stated that the psychological needs to feel related and competent contribute to the regulation becoming internalised, with the satisfaction of autonomy determining the *degree* to which it is internalised and, thus, whether external motivation can become autonomous and to which extent. The satisfaction of these three needs (competence, relatedness and autonomy) are argued to enhance wellness, performance (especially requiring creative and cognitive abilities), or also job satisfaction (Gagné & Deci, 2005, p. 337).

As was found in the early studies on intrinsic motivation, the development of SDT rather focuses on motivation being either autonomous or controlled, with the implication that external interventions do not impair intrinsic motivation, but only have an effect on extrinsic motivation. However, this view stands in contrast to the early approaches to the undermining effect of incentives on intrinsic motivation, as well as to works based on these insights from economic researchers on intrinsic motivation crowding-out (MCT), briefly referred to previously. This thesis will stick to the latter approach, namely that of the possible crowding-out effect of incentives on intrinsic motivation, rather than on the one of SDT, which suggests the effect to be only influencing extrinsic motivation. The rationale behind it will be more comprehensible in the next section, which presents further elaborations on the effects on intrinsic motivation by economic researchers. Yet, the classification of the various degrees and the idea of autonomy proposed in SDT will still be important factors in this study.

### **Support perception**

Following the prior psychological research, also some economists have taken up the idea of the effect depending on how it is perceived by the one being incentivised.

With a look at the crowding effect (MCT) as already having been glanced at, Frey and Jegen (2001) determined a crowding-in effect on intrinsic motivation in cases where the incentive is perceived as supportive. This occurs if self-esteem and freedom of action are furthered, which means that self-determination is enhanced.



Opposite to this effect, intrinsic motivation can also be crowded out in the two following situations:

- *Decrease in self-determination*: When self-determination is impaired, people feel more extrinsically controlled and a sense of over-justification for retaining intrinsic motivation.
- *Decrease in self-esteem*: When the extrinsic incentive is being perceived as not acknowledging the own motivation and is accompanied by a feeling of not being competent, intrinsic motivation fades and effort is reduced, while losing the possibility of showing involvement in a task (Frey & Jegen, 2001, pp. 594-595).

Consequently, it shows the perception of support to be relevant in terms of autonomy, self-determination and self-esteem for determining how an external reward affects intrinsic motivation.

#### 2.3.2.3. *Fairness*

Another factor that could have an effect on intrinsic motivation pertains to preferences and motives for equity and fairness. In a study trying to test whether well-being and happiness are dependent on relative income (meaning a level of income as compared with the income of other colleagues), data from about 5,500 households in Britain show this effect, namely that the level of satisfaction is negatively linked to their income reference level (Clark & Oswald, 1996). Yet another study emphasizes this effect, especially regarding relative income and its effect of reducing cooperation among employees (Lazear, 1989). Hence, this suggests low variance in income and with the consequences for happiness, could also be of value for affecting motivation.

#### 2.3.2.4. *Value*

As has been shown by the different studies discussed above, some activities are driven by social preferences and thereby motives that involve a high *intrinsic value* for the activity, as in the HAIFA donation collection case with the motive of helping others with the money collected (Gneezy & Rustichini, 2000a). It was argued in this study that incentives can cause a change in perception of the nature of the activity and, with this, a crowding-out effect on intrinsic motivation. This could be of importance if incentives

diminish the perceived value of the task. However, the idea of incentives possibly destroying the intrinsic value of a task could be subordinated to the above outlined idea of support perception, as when the incentive is perceived as controlling in terms of self-determination. This effect could be compared with the effect of the crowding-out of motivation related to feeling over-justified for getting paid for an activity. Consequently, the possible effect of an incentive destroying the intrinsic value of a task will be included in the concept of control perception.

Returning to the previously posed question of how an incentive system could be functional by enhancing motivation, it can be concluded from the discussion on the level of incentives and performance measurement that **low-powered incentives** (relating to the level of the incentives) seem rational given the problems arising from high-powered incentives, and that there should be **objective**, as well as **subjective performance measures** applied. These could be considered the prerequisites for the design of an incentive system necessary to make it work, though in order to answer the question, the perspective of those being incentivised should be taken into account and, thus, how the incentive affects their motivation. As the literature provides suggestions of what should be taken into account – which were elaborated on in the prior section – adhering to all these conditions derived from the research on work motivation could serve as a basis for gaining further insights into how such a system can work and how it influences motivation.

In brief, implying from a combination of the different approaches towards the issue from the fields of psychology, economy and sociology, it could be presumed that if an incentive is aligned with the suggested design, the system could work and have the intended effect only if it satisfies the according conditions. In this study, this very expectation will be explored by conducting a case study in the science sector, in which the incentive system pertains to the Publication Premia Programme for researchers of the Faculty of Business, Economics and Statistics of the University of Vienna.

## 2.4. RESEARCH CASE AND HYPOTHESES

First, the Publication Premia Programme will be described in short, followed by a construction of research hypotheses based on the theoretical advances and literature presented beforehand. Last but not least, the importance of the contribution of this case to research will be addressed.

### 2.4.1. The Publication Premia Programme

Since 2015, the Faculty of Business, Economics and Statistics has granted premia for its researchers for publications in “top” journals of its core fields and related ones, with the rationale of providing an appreciation for excellent research and an incentive for publishing in these internationally acknowledged journals. The journals for which the premia are granted are accumulated in the *Faculty Journal List* (FJL), which is a list of journals divided into two categories, comprising 177 journals in Category 1 and 301 journals in Category 2 (Universität Wien, 2016, p. 72).

The allocation to the list is based on two sources, the Journal Citation Reports (JCR), by Thomson Reuters from 2015 (Reuters, 2015, quoted after Universität Wien, 2016), and on four additional lists of the fields Business, Economics, Statistics and Finance. The JCR contains the Science and the Social Science edition, wherein the ranking of the journals is carried out according to the Article Influence Score, which is a measure for the average influence of the articles of a journal over a period of five years, counted beginning from the publication date.

These journals are assigned to

- *Category 1*: when a journal accounts to the best 10 percent (the first decile) within the JCR fields or to the best classification of one of the additional lists;
- *Category 2*: if a journal is not contained in Category 1 but belongs to the best 25 percent (the first quartile) of the JCR fields, or to the second-best rating within the additional lists.

The yearly payments depend on the budget, whereby more money is paid for a publication in a journal of Category 1 than of Category 2 and the payment is distributed among all co-authors of a publication (Universität Wien, 2016, pp. 100-107).

### 2.4.2. Hypotheses

Referring to the proposed design for incentive systems – that they should be low-powered, with objective and subjective performance measures – it can be assumed that the Publication Premia Programme meets these requirements per se: the level amounts to only some hundreds of Euros (depending on the yearly budget and number of authors sharing the amount), and by rewarding only publications in top-journals, it not only fulfils the objective performance measure, but also the subjective one, as it can be considered an indication of high quality to publish in one of the journals.

Consequently, with the system already complying to these criteria, the next step towards answering the question of how a performance-based incentive system could work properly can be taken by answering the following research question:

*How does the Publication Premia Programme influence the motivation of researchers at the Faculty of Business, Economics and Statistics of the University of Vienna?*

Based on the theories in the literature addressed in the theoretical section of this thesis, which indicate the necessity of the incentive meeting certain conditions, the research hypotheses are the following:

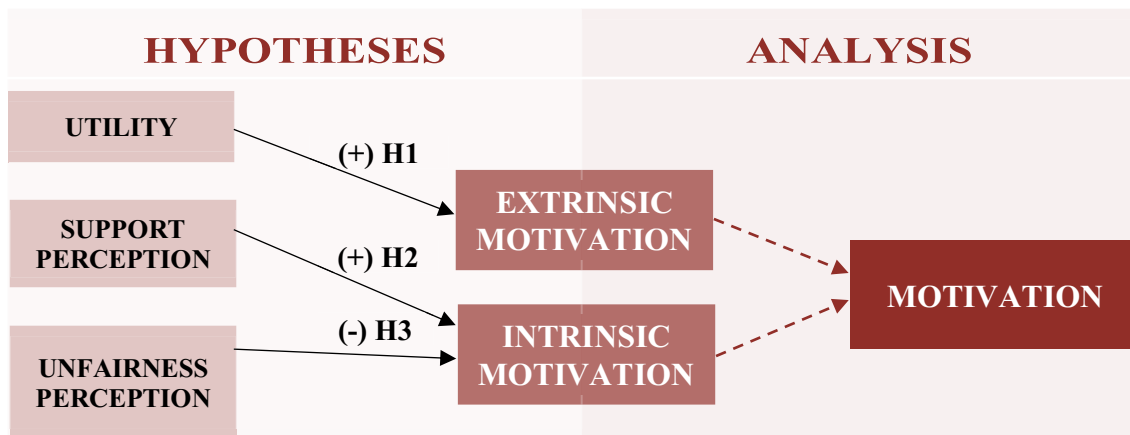
H1: *If the Publication Premia Programme increases the utility of the researcher, it positively affects extrinsic motivation.*

H2: *The more the Publication Premia Programme is perceived as supportive, the more it enhances intrinsic motivation (motivation crowding-in).*

H3: *If the Publication Premia Programme is perceived as unfair in relation to the colleagues, it negatively affects intrinsic motivation.*

With these hypotheses, not only the effects on motivation in general should be investigated, but also the effects on extrinsic and intrinsic motivation individually and, as part of the later analysis, how they interact to combine into motivation as a whole, which is graphically depicted in Figure 4. In this sense, it suggests that in order to work the incentive should raise utility, be perceived as supportive, not be perceived as unfair, and the value of the task should not be destroyed by the premium.

**Figure 4:** Graphical illustration of the research hypotheses and analysis



Source: Own illustration

### 2.4.3. Relevance of the research topic

There has already been some research on the effects of bonus systems in research institutions (e.g., Andersen & Pallesen, 2008; Vogel & Hattke, 2017), but they rather focus on overall performance (output) through measuring the number of publications. One example is a study comparing the effects of different bonus systems in 162 research institutions in Denmark (Andersen & Pallesen, 2008). This study investigated the role of Frey's suggestion of the perception of an incentive to be taken into account, finding support for a higher likelihood of an increasing number of publications when the incentives are perceived as supportive. Another study, a vignette survey with 384 participants, shows similar results in a different setting, finding that organizational citizenship behaviour is negatively affected by performance-based pay if it is perceived as controlling, being described as a change from an intrinsic to an extrinsic drive (Jacobsen & Jensen, 2017).

In the present study, support perception (and the opposite factor, control perception) of the incentive is also integrated into the framework. However, it is not the only factor being included, as other factors extend the possible influences on behaviour. The main aim of this work is to show the *factors influencing extrinsic and intrinsic motivation*, which represent the *conditions* being necessary for designing working incentive systems. Moreover, the focus of this study is not on performance but on motivation, seeking a better understanding of which conditions could play a role in influencing extrinsic and intrinsic motivation and how these conditions interact and affect overall motivation. This could allow drawing a conclusion about what to pay attention to when designing incentive

systems, especially with respect to the transfer of information and the perception of the incentive. The present study, with the chosen approach of trying to align perspectives from different research areas with each other, could also extend the existing literature on the conflicting answers to the question of which conditions incentives need to meet in order to have a positive effect on motivation.

### **3. RESEARCH METHODS**

In order to look more deeply into the possible effects of the Publication Premia Programme (referred to as *premium system* in this thesis) and to achieve the desired implications as described above, as well as to examine the hypotheses, a case study designed according to a qualitative method of research was carried out. The approaches and methods used will be elucidated in this section.

#### **3.1. DATA COLLECTION**

For this research, a qualitative design was chosen, based on the suggestions and explanations provided by Mayring (2010, pp. 17-25), as a qualitative method provides the opportunity to gain a better understanding of the conditions necessary to make an incentive system work. It also makes it possible to evaluate how incentive systems influence motivation and how extrinsic and intrinsic motivation interact. This represents a comprehensive approach towards explaining the effects of the premium. Rather than really “testing” the hypotheses statistically, it should focus on the relationship between the variables in depth, leaving space for new, unexpected insights and explanations of how the variables, as well as the different motivational types, interact and how the effects are perceived by the interviewees. This should help clarify the influences of the incentive system on the two types of motivation, and also to analyse and explain the factors influencing these two types, how the incentive system affects motivation overall, and whether the system works. Regarding the influencing factors, the possible influences on motivation suggested by the different fields of research, which were integrated into the hypotheses, will guide the analysis. Moreover, within this process, the qualitative approach allows considering the incentive system in a broader context, namely what drives the researchers to choose that

profession, how they perceive the research environment and system. It also facilitates determining the role of the incentive system within their embedded system. In order to be able to access the social data available for this analysis, the researchers being questioned should have the space to answer in an open way, allowing them to express their subjective view on the matter of what drives their behaviour. Consequently, an explorative method of research was employed, using a partially structured questionnaire manual for interviews with the researchers of the Faculty of Business, Economics and Statistics of the University of Vienna, who are the subjects of research interest, as they are able to obtain the publication premium. The questions were partly posed indirectly to leave the intended space for them to express their thoughts. Further to this, the interview being only partly structured, enables adapting the course of the interview depending on the answers provided by the respondents and seizing on the specific topics mentioned. This allows a spontaneous operationalisation and a flexible environment for new insights, relationships and subjective evaluations of the research topic (Atteslander, 2010, pp. 134-135).

### 3.2. OPERATIONALISATION

To translate the theoretical terms used in the hypotheses into research operations, indicators should be defined. In this qualitative approach, however, the indicators are replaced by questions or rather stimuli, relevant for addressing the topic (e.g. Atteslander, 2010, pp. 46-49). Table 1 provides short definitions of the independent and dependent variables derived from the literature and their case-related descriptions used in the hypotheses. These definitions serve as a basis for the construction of the interview manual, and for the later analysis and categorization of the answers provided by the interviewees.

**Table 1:** Definition of independent and dependent variables

Variable	Definition according to literature	Case-related meaning
<b>INDEPENDENT VARIABLES</b>		
UTILITY	Publication Premia Programme is perceived as useful, by increasing personal utility	<ul style="list-style-type: none"> <li>- the level of the publication premium</li> <li>- further utility, such as reputation or advantages for future job applications derived from receiving the premium</li> </ul>

	(both the journal list and the premium itself)	
SUPPORT PERCEPTION	Perception of the incentive as being supportive in terms of self-determination (autonomy) and self-esteem (a feeling of responsibility for one's own performance), whereby the perception of control expresses the opposite of support perception <sup>1</sup> (MCT by Frey & Jegen, 2001, p. 595; SDT, see e.g., Deci & Ryan, 2000)	<ul style="list-style-type: none"> <li>- <i>self-esteem</i>: perception of the premium as acknowledging the effort required to publish in a top journal and thereby a feeling of appreciation and enhancement of one's own competences</li> <li>- <i>self-determination</i>: the premium allows the freedom to act while researching (it does not control the researcher's publication behaviour and is not perceived as controlling, as it would if they were forced to publish in the journals listed in the FJL, or destroying the intrinsic value that research has for them)</li> </ul>
FAIRNESS PERCEPTION	People tend to compare their income with others, determining their level of happiness (relative income, Clark & Oswald, 1996)	<ul style="list-style-type: none"> <li>- perception of the fairness of the Publication Premia Programme in relation to others when others win the premium (as a result of comparing income with others)</li> </ul>
<b>DEPENDENT VARIABLES</b>		
EXTRINSIC MOTIVATION	Externally driven motivation to obtain a positive outcome, such as an incentive (Olafsen et al., 2015)	Whether the premium affects extrinsic motivation.
INTRINSIC MOTIVATION	Internally driven motivation – interest in the task itself (Olafsen et al., 2015)	<p>If intrinsic motives like</p> <ul style="list-style-type: none"> <li>- interest in researching,</li> <li>- having fun learning,</li> <li>- controlling one's own time and research topics,</li> <li>- contributing to progress and society through research, are influenced by the system.</li> </ul>

<sup>1</sup> For more information on the definition of self-determination and self-esteem see section 2.3.2.2.



The hypotheses and the corresponding variables cannot be addressed directly to obtain broader answers about the effects on motivation or explain and understand the issue in a much broader context. Therefore, the questions were not designed to be overly direct, partly consisting of a combination of fixed questions and stimuli so as to obtain a general idea about the relationship between the variables. Moreover, the questions were adapted to the interviewees, especially depending on their contracts (fixed term, tenure). The logic of the questionnaire is as follows: first, the interviewees are asked what they like about their work and what they consider to be important about it, thus, what drives their behaviour. The next step is to ask about the future path they plan to take in science, and what they think would be important for getting there and achieving their goals. Within this process, the role of publications is addressed, successively approaching the relevance of the FJL to their research and the Publication Premia Programme behind the list. As these questions are quite broad, they are accompanied by more focused questions or stimuli in case the respondents do not themselves mention the expected issues aligned with the variables and their definitions. The questionnaire manual is attached in *Appendix 2*. It should be noted, however, that it is only a draft with sample questions guiding the interviews, as the questionnaire is designed to be responsive to the interview situation and the course the interview takes.

The interviews conducted were recorded, and the resulting audio files transcribed. However, for guaranteeing anonymization of the respondents, the transcribed interview material is not attached to this thesis.

### 3.3. DATA SAMPLING

The sample was taken from all departments of the Faculty of Business, Economics and Statistics to guarantee a high degree of heterogeneity, in order to investigate the research case from different perspectives, and possibly detect differences. Thus, it is comprised of researchers from the departments of Business Administration, Finance, Statistics and Operations Research and Economics and Economic Sociology. The second criterion for choosing the respondents pertains to the type of contract and position the researchers are in: the focus was placed on young professionals, hence researchers with “**Post-Doc**”, as well as “**Tenure Track**” contracts were targeted. However, for comparison, **some**

**professors** were also chosen. As young professionals with a Prae-Doc contract often do not remain in science, only one person with a contract nearing its end was chosen. This could allow drawing a distinction between fixed-term and tenured professionals. Accordingly, the questionnaire was slightly different for people with these two types of contracts, as they pursue different goals in terms of future employment situations.

Though Business Law department is not targeted by the Publication Premia Programme (as the research in this department has a mainly national focus and is thus published in national journals and in German), one interview was carried out with a researcher from this department, to get an idea about motivation from this perspective as well. Regarding the overall intrinsic motivation for conducting research and teaching, it was not distinct from the motivation of researchers from any other departments. When the premium system was addressed in the interview, this researcher expressed neither positive or negative perceptions about it, as it is not of any importance for the research of that department. Therefore, this interview will not be included any further within the analysis and the following chapters. As for the other interviewees, one researcher is planning to leave the faculty after his contract expires but is still integrated into the analysis as still having been eligible for the incentive system.

After selection based on these criteria, the researchers were personally contacted for an interview, whereby this sample included the researcher from the business law department, meaning that for the following analysis, only the other **nine researchers** are of interest. The sample in total looks as follows:

**Table 2:** Characteristics of the sample

Characteristics	Interviews		10 people
Gender		Female	5
		Male	5
Contract	Interviews A – F <sup>2</sup>	Fixed-term (Post-Docs, Tenure Track, Prae Doc)	7
	Interviews G - I	Tenured (Professors)	3

<sup>2</sup> Regarding quotations from the transcribed interview material: Interviews A, B, C, D, E and F were conducted with researchers with a fixed-term contract; Interviews G, H and I with professors.

### 3.4. ANALYSIS AND INTERPRETATION: METHODOICAL APPROACH

For the analysis and interpretation in the following sections, a qualitative content analysis as suggested by Mayring (2010) was applied, an analysis based on categories, with the advantages of allowing a systematic approach following specific rules, accompanied by the possibility of gearing the category system to a concrete study.

The literature review has already presented explanations and descriptions of the most important factors influencing motivation, providing conditions under which incentive systems could work. Working from the literature, the hypotheses represent a combination of ideas and approaches from different research to explain the effects of performance-based incentive systems. Thus, these existing definitions are relevant for explaining the used variables and factors used in the present study. Therefore, for creating categories for the analysis, a deductive method was primarily used, specifically the qualitative technique known as “structuring”, based on the work of Mayring (2010, p. 13; pp. 92-109).

#### 3.4.1. Structuring

Structuring the material was done by constructing categories in a deductive way derived from the literature. All sections from the transcribed interview material were extracted and allocated to these categories. This allows to express the independent variables – the factors or conditions in relation to the premium system influencing motivation – and the dependent variables as categories, which can then be analysed and their effects on motivation explored.

As there are different types of structuring available, depending on the target of the analysis, structuring with regard to content (*Inhaltliche Strukturierung*) was applied for this study. This type of structuring aims to screen and summarize the material with regard to specific content and aspects, namely the different variables representing the influencing factors and necessary conditions for a working incentive system. The values of the categories are based on a scalar structuring type (*Skalierende Strukturierung*), which allows for ordinal scale-based values that are necessary for the analysis of the values of the variable *support perception*. The process of structuring the transcribed material is described below in more detail, following Mayring (2010, pp. 92-94).

#### 3.4.1.1. *Categories: Construction and allocation*

Hence, for a first estimation of the boundaries specified by the hypotheses, categories were identified deductively from the reviewed literature, especially supported by the variables and their supposed values. For this purpose, Table 1 was extended: the categories were defined, common examples from the transcribed interview material were mentioned for every category and coding rules were defined. This was done by conducting a test run on some interviews in order to identify problem areas and adapt the categories accordingly. For this, sections of the material were marked and extracted, meaning they were allocated to a fitting category according to the coding rules. After the first run and the adaptations, this process was applied to all the transcribed interview material. In this way, new categories could be formed (an inductive way of creating categories), and additional material of interest extracted and collected.

#### 3.4.1.2. *Summarizing*

The extracted sections that were assigned to the categories were then summarized (following Mayring, 2010, pp. 67-85), meaning that, within the categories, they were first translated into English (as the interviews were conducted in German) and paraphrased (rewritten in a simplified form). They were then generalized, whereby repetitive and irrelevant statements were deleted, and finally reduced in order to represent the essence of the original paraphrase.

### 3.4.2. Analysis and interpretation

Both the original extracted sections of the transcribed material derived during the category allocation, as well as the sections in their reduced form, were used for the analysis to understand the relations between the independent and dependent variables and the influences on motivation, and for the description of the various factors or conditions.

In the analysis, first, the categories of the independent variables were addressed by outlining and discussing the allocated and summarized material in terms of the factors influencing motivation. Next, the hypotheses were examined and evaluated for all cases, considering whether they followed the expectations previously made or if they can be

extended or related differently to each other. Based on this, the interdependency of extrinsic and intrinsic motivation for every case were evaluated for a determination of the effect of the incentive system on motivation as a whole.

Subsequent to this analysis, the results were interpreted, and an attempt was made to answer the research question. Further, it will be discussed whether the conditions for a functioning incentive system hold.

The **quotations** used in Appendix 3, Appendix 4 and which will be used in the subsequent chapters, refer to the transcribed interview material, which is, as already addressed, not attached to this thesis in order to guarantee anonymization of the respondents. As I carried out all the interviews, the quotations in the following do not contain the interviewer's name.

## 4. ANALYSIS

For the structuring process as described above, a *coding manual* was created: allocation rules to the categories were established both deductively (by combining the different perspectives from literature) and inductively during the structuring process. This means the category system was customised for this case study in that it was adapted and expanded during the allocation process in order to record all information that was apt for the subsequent analysis. Because of its relevance for the analysis, the coding manual is shown in *Appendix 3* – building a bridge between the theoretical and the analytical parts of this thesis.

The structuring process as described above with its resulting categories and sub-categories are depicted in *Appendix 4*. The category and sub-category system serves as the basis for describing the factors through which the publication premium system possibly affects motivation, making it possible to identify the conditions under which a performance-based incentive system could work properly.

In the following sections, these categories and their meaning will be elaborated on and analysed according to the expectations expressed in the hypotheses about the relationships between the factors concerning how the premium system is perceived and their

*effects on extrinsic or intrinsic motivation.* Next, interrelations between the two types of motivation will be addressed, enabling a discussion of the *overall influence of the premium system on motivation.*

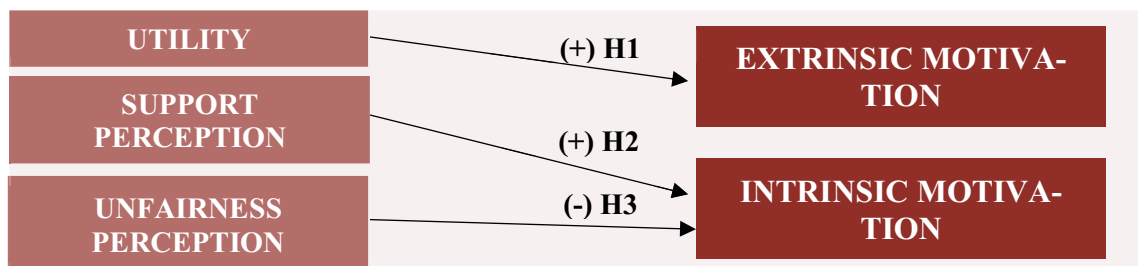
#### 4.1. EFFECTS ON EXTRINSIC AND INTRINSIC MOTIVATION

In approaching the research question and, therefore, the effects of the premium system on extrinsic and intrinsic motivation, the analysis aims to answer following questions:

- Under which conditions does the premium system influence motivation? In answering this question, the different factors as expected to comprise the independent variables affecting motivation are targeted.
- How does the premium system influence motivation through these factors?
- Are these answers consistent with the expectations derived from literature and expressed by the hypotheses, and what does that mean?

These questions are discussed and answered, structured according to the expectations expressed in the hypotheses.

**Figure 5:** Graphical illustration of the expected relationships between the variables



Source: Own illustration

##### 4.1.1. Hypothesis 1

The first hypothesis is as follows:

H1: *If the Publication Premia Programme increases the **utility** of the researcher, it positively affects extrinsic motivation.*

*Utility* is the first factor being of interest for the evaluation of how the incentive system is perceived. Table 3 provides an overview of the aspects and criteria of the premium system that were brought up by the interviewees and that can be categorised as either enhancing utility, or not changing it at all. Hence, the table lists the categories derived from the extracted and allocated material from the interviews showing whether and why the premium system (both the premium and the FJL) increases utility. These aspects are briefly explained below, structured according to whether or not these aspects enhance utility.

**Table 3:** Categories and sub-categories of the independent variable *utility*

CATEGORIES		UTILITY ENHANCING	NO CHANGE IN UTILITY
SUB-CATEGORIES	PREMIUM	FINANCIAL ASPECT	ONLY PUBLICATION OF VALUE
		SIGNALLING EFFECT	
		FLEXIBLE UTILIZATION	INAPPROPRIATE COMPOSITION OF THE FJL
		EARLY PAY-OUT	
	FJL	INFORMATION	LACK OF REGULARITY
		FEEDBACK	

#### 4.1.1.1. *Utility enhancing*

The sub-categories of the ways the interviewees perceive the premium system as enhancing their utility are described as being attributed either to the premium itself, or to the FJL. The fact that some expressed utility as increasing while also showing the tendency of no change will be considered.

#### **Financial aspect**

The financial aspect concerns the perception of the premium mainly as a nice “goody”, (having been expressed in German as being a nice *Zuckerl*) – a financial support allowing them to spend money in a more flexible way, as being especially important for young scientists without their own necessary research budgets, especially in the absence of third-party funding (Interview A, 2018, lines 323; 341; Interview C, 2018, lines 101-105; 221-222; Interview D, 2018, lines 75-76; Interview E, 2018, lines 137-141; Interview G, 2018, lines 183-184; Interview H, 2018, lines 196-201).

### **Signalling effect**

Another important factor addressed by some interviewees is the signalling effect of the premium system: it is perceived as signalling that there are differences in research quality, in the sense that the high research quality and performance needed to achieve a publication in a good journal is valued and rewarded – to use the available financial means as an indicator for the direction where to focus on. The premium can be described as being useful in that it indicates the priority set by the faculty and what is expected from the researchers. An example of this is one interviewee who observed that some people are in projects that are basically of a consulting, rather than of scientific, nature. They publish in some journals in the meantime, but do not focus on putting effort into publishing in high-quality journals – and yet they want to get a premium for that, too. This researcher said, “*Eben deswegen ist es auch wichtig, dass man nicht für jede Publikation eine Prämie bekommt*” – meaning that, because of this phenomenon, it would be important that one does not get a premium for every publication (Interview H, 2018, lines 229-231). Consequently, the premium system is perceived as to emphasising on the importance of the high quality of their research (Interview C, 2018, lines 97-100; Interview H, 2018, lines 166-169; Interview I, 2018, lines 185-195).

### **Flexible utilization and early pay-out**

Another factor concerns the question of how and for what to use the premium: namely, it was emphasised that it can be used very flexibly and unbureaucratically, for example, for travelling costs or for attending conferences at which they themselves are not presenting (Interview A, 2018, lines 303-306). Moreover, it is possible to request the premium already in advance. Normally, the premium relates to the publishing date of the paper in one of the journals of the FJL. However, the time between the application for publishing and the actual publication date in the journal can be quite long, which can be problematic for fixed-term researchers whose contract is about to expire: if they apply for it in advance (while their contract is still in effect), they can still receive the premium even after their contract has ended (Interview A, 2018, lines 309-321).

### **Information and feedback**

In addition to the factors discussed above, one concerning the FJL itself is its information value, as it provides an overview of high-quality journals for researchers who are approaching non-familiar subject areas. Another advantage of the list that was identified



was providing feedback on personal performance, as when sending the paper to one of the journals of the FJL, the responses from the reviewers could help improve the paper, as well as future work (Interview A, 2018, lines 138-140; Interview G, 2018, lines 198-199).

The above factors show how and why the premium system is perceived as enhancing utility. However, not only factors accounting for being of positive utility were brought up by the researchers, but also some that do not contribute to providing any further utility. At this point, it should be noted that some of these aspects were addressed by some interviewees in addition to useful ones, such as perceiving it as a nice “goody”.

#### 4.1.1.2. *No change in utility*

The next aspects relate to why the premium system is regarded as not enhancing utility:

##### **Only Publication of value**

Young researchers are in the position of having to prepare their career path with a good CV containing high-quality publications. This can be highlighted, for example, by one researcher saying *“Ja, die Publikation selbst, würde mir letztlich dabei helfen, zu sagen, erstens, die Stelle zu halten, und zum anderen, wenn ich mich woanders bewerben wollte, ist natürlich da die Publikation extrem wichtig. Also so gesehen, erlangt der Wert der Publikation also in allen Bereichen, einen so viel Höheren als die Prämie”*, meaning that the publication itself would help in maintaining the current position, and, in the case of applying somewhere else, the publication would be extremely important. In this sense, the value of the publication itself would be much higher than that of the premium (Interview F, 2018, lines 81-84).

Others also shared this attitude of the premium system not providing much additional utility with regard to future positions, in that

- when applying for future jobs, publications in high-quality journals would be required anyway; and thus,
- the publication itself would count and be of higher value than the premium (Interview A, 2018, lines 129; 133-134; Interview F, 2018, lines 81-84).

Although for professors, this need for future jobs is not present any more to such an extent since they have a tenured position, one professor refers to this aspect in stating that it

would be foolish to give the premium to a professor, as for a professor the incentive for publishing exists in any case, as it is needed for applying for third-party funding or future jobs (Interview H, 2018, lines 169-172).

### **Inappropriate composition of the FJL**

Another concern was raised regarding the composition of the FJL not being of high utility due to a lack of understanding of the selection of the journals, as in the list either the relevant journals for a particular subject are not contained, or the allocation of journals to the two categories was criticized. For example, some high-quality journals are found in the second category, while some of lesser reputation in the according subject area – or having been called “bizarre” – are found in the first category (Interview A, 2018, lines 141-145; Interview B, 2018, lines 72-74; Interview H, 2018, lines 121-124).

### **Lack of regularity**

The last way of not depicting an increase in utility is that one interviewee regarded the system as lacking regularity of payments because of the performance-contingency (Interview E, 2018, lines 43-47).

#### *4.1.1.3. Effects on extrinsic motivation*

Summarizing the categories of the previous section, the most important factors for perceiving the premium system as enhancing utility – having been mentioned most often by the interviewees – are the *financial aspect* of the premium (being considered as a “goody”), and the *signalling effect* of the priority of high-quality publishing. In contrast to these arguments, some researchers expressed their future career as being an *incentive per se* (without the premium additionally contributing to it), and some criticised the *composition of the FJL*. However, these factors only show how the premium system enhances utility or not. What does this further mean for extrinsic motivation – that is, how does the premium system affect motivation through these factors? Though it is rather a part of a quantitative analysis, the extent to which extrinsic motivation is influenced by the premium system through the factors expressing utility is being roughly evaluated, for the purpose of enabling to look at whether and how the premium system affects motivation. The approach for doing this involves an evaluation of which factors were addressed by the interviewees: for some, this was easily done, as they have only mentioned factors

having been shown to be perceived as enhancing utility, while others have addressed both types of factors – those enhancing and those not or only slightly affecting the perception of utility. For the latter group, these positive, as well as negative aspects are being balanced against each other, moderating the overall positive utility and thereby positive influence on extrinsic motivation. An example of a researcher addressing positive, as well as negative aspects, is saying that the premium would be considered as a nice “goody”, but that for future positions only the publication itself would count and that the list would not be fully comprehensible (Interview A, 2018, lines 129; 141-143; 337-342). This comparison and balancing of the different aspects positively or not changing the perception of utility has been carried out for all interviewees. The resulting evaluations are presented in the next section, leading to either a positive or no effect on extrinsic motivation. Examples are also provided showing how extrinsic motivation is affected.

### **Positive effect**

One third of the interviewees consider the premium system as enhancing utility by either being financially supportive and/or by its signalling effect, and do not mention any of the factors being contained in one of the sub-category of *no change in utility*, thus, factors that would weaken the positive perceived utility of the premium system. For all three of these researchers, the way they express the utility of the premium system clearly shows the tendency of raising their extrinsic motivation. For example one respondent said, “[...] *mich motiviert es natürlich auch, dann zu sagen, ok, naja, wenn ich ein bisschen noch zu dem Paper mehr mache, kann ich das noch höher einreichen und vielleicht klappt es dann mit einer noch besseren Publikation und ich finde das schon motivierend*” (Interview C, 2018, lines 101-105). Translated, this means that the premium system motivates this researcher to put a little more effort into the paper, and that entails the possibility of obtaining a better publication, which is simply motivating. Another example of showing increased motivation is the respondent who spoke about the personal importance of the FJL and that it would be consistent with the own criteria: “*Die Liste ist mir wichtig und ist auch konsistent mit meinen Kriterien*” (Interview G, 2018, lines 171-172).

### **Moderately positive effect**

Pertaining to the others, about one third of all interviewees also mentioned factors that did not enhance their personal utility. Though considering the premium system as being financially supportive, but in addition referring to the factor of the incentive for

publishing as prevailing and/or criticising the composition of the FJL. In this case, this second perspective moderates the positive utility-enhancing effect of the premium system and thereby the overall positive effect on extrinsic motivation. An example of this effect is the statement about the premium being “nice”, but not playing a large role (“*Das Prämiensystem ist nett, spielt aber keine große Rolle*”), or saying that it motivates more, but not to a great extent (“*Es motiviert mehr, aber nicht in einem überragenden Ausmaß*”) (Interview A, 2018, line 127; Interview E, 2018, lines 132-135). Hence, the effect of the premium system on the extrinsic motivation of those researchers is very low and can be described as only slightly positive.

### **No effect**

For the last third of the interviewees, either the effect of no change in utility seems to be stronger than the increase in utility, or the premium system is not perceived as enhancing utility at all because of the incentive to publish is already high, or because of criticising the FJL. This is in line with how the premium impacts motivation, as in case of saying that the premium would not be that high and would not additionally motivate, or indicating that one would not put more effort into work because of the premium, as the motivation and career incentive to publish would already be very high (Interview B, 2018, lines 82-85; Interview F, 2018, lines 72-74; 81-84).

### **Relationship between the variables**

As was described, for *three researchers* the premium system seems to increase utility and motivation to a high extent; for the others, this effect was slightly detected or not at all. These effects of the premium system on utility and motivation seem to indicate the tendency that the degree of utility perception is in line with the effect on extrinsic motivation, with one exception: as was referred to already, one researcher perceived the premium as enhancing utility in that it enables spending financial resources more flexibly, but characterised it as foolish to get the premium as the incentive for good publishing is given anyway – and thereby clearly showing no increase in extrinsic motivation (Interview H, 2018, lines 169-172; 198-199). As for the other cases, the relationship between the two variables (utility and extrinsic motivation) seems consistent with the expectation that was been made in the hypothesis, namely: “*If the Publication Premia Programme increases the **utility** of the researcher, it positively affects extrinsic motivation*”.

This shows the relevance of the first factor, “utility”, to a positive perception of the premium system regarding extrinsic motivation. The notion of a positive effect being most intensive when no negative aspects seem to reduce perceived utility emphasises on the relevance of the factor utility for affecting motivation, especially when focusing on the financial and the signalling aspects of the system. As was discussed previously in the theoretical section of this paper, this shows the importance of this *economic condition* for a positive perception of the incentive system.

Attaching to this and underlining this effect, if this economic condition – utility perception – is impeded by other factors seemingly reducing utility of the premium as having been discussed, utility perception either does not seem to positively affect extrinsic motivation, which was the case for one third of the interviewees; or only weakly affects motivation, as was true for another third of the interviewees.

As for looking into the expected other conditions derived from literature, the next section analyses the role of the *support perception* of the premium system for enhancing intrinsic motivation.

#### 4.1.2. Hypothesis 2

The second hypothesis, was stated as follows:

H2: *The more the Publication Premia Programme is perceived as **supportive**, the more it enhances intrinsic motivation (motivation crowding-in).*

As was described in previous sections, and in the literature, with regard to MCT (Frey & Jegen, 2001) and SDT (Deci & Ryan, 1980, quoted after Deci & Ryan, 2000), the perception of the premium system as being supportive is divided into two main categories, namely into *self-determination* and *self-esteem*, which should occur in a cumulative way in order to have a crowding-in effect of intrinsic motivation. Summarizing from Table 1, support perception in terms of self-determination is defined as requiring autonomous motivation and behaviour, which is the case if one can identify himself or herself with the behaviour, and thus contributing to his or her personal aims and being part of oneself. This also means that support perception in terms of self-determination requires that the behaviour not be perceived as controlling, in the sense of removing the autonomy and

destroying the intrinsic value of the task itself. As applied to this study, control perception would mean one would feel obliged to publish according to the FJL, although it would not comply with one's own research criteria for choosing journals. Thereby, the intrinsic value of researching, the urge to choose topics important to investigate for society, would be diminished. Support perception in terms of self-esteem would mean to feel appreciated for the research one does. These two elements of support perception were analysed for their values (represented by the categories) and, being described by their sub-categories, showed the factors affecting whether the premium system is perceived as supportive or not supportive. As in the previous section, discussion of the factors is structured according to whether they are considered to be perceived as supportive or not – regarding both components of support perception, namely self-determination and self-esteem. First, **self-determination** will be addressed.

## SELF-DETERMINATION

**Table 4:** Categories and sub-categories of the independent variable *support perception*: self-determination

CATEGORIES	SUPPORT PERCEPTION	NO SUPPORT PERCEPTION	CONTROL PERCEPTION
SUB-CATEGORIES	CONSISTENCY WITH OWN CRITERIA	NO RELEVANCE	INTRINSIC VALUE DESTROYED

### 4.1.2.1. *Self-determination: support perception*

One main factor has been identified as determining the effect of the premium system on support perception: consistency with one's own criteria.

#### **Consistency with one's own criteria**

This sub-category indicates the degree of autonomy expressed by the interviewees when publishing according to the FJL aligns with their own research and publishing criteria, in which case it does not limit their autonomy. An example of this is the response, "*Ich richte mich einfach fachlich nach den Themengebieten. Es gibt andere Rankings, nach denen ich mich richte – aber unsere Fakultätsliste ist konsistent damit*" (Interview G, 2018, lines 175-177), meaning that this person's publishing criteria centre on subject

areas and rankings, which is consistent with the FJL. In terms of autonomy, this would also account for the example of one researcher who chooses the journals according to what is considered the best journal, internationally speaking; but who also points out that there would be much overlap between the journals the researcher would think of as internationally highly accredited and those highly regarded by the University of Vienna: *“Eigentlich versuche ich, was ich denke, das beste Journal ist – international gesehen. Also wie gesagt, es ist viel Overlap, wenn ich denke, dass es international gut ist, ist es sehr wahrscheinlich an der Uni Wien anerkannt”* (Interview F, 2018, lines 60-62). However, this only shows the autonomy connected with the process of choosing the journals. In case of this example and some other interviewees who agreed that their journal criteria were consistent with the FJL because important international journals for their specific subject area are on it, this cannot be considered perceiving the system as supportive if they do not look at the list, or look at it only just before submitting the paper when deciding between two journals and then taking the one being listed on the FJL. This is reflected in the following statement: *“Ich denke, wenn man die Wahl hat zwischen zwei, dann würde man sich das anschauen, und würde sehen, „ok, da kriege ich jetzt mehr Prämie“, aber dafür ist es monetär auch nicht so viel. Es ist nettes Geld, aber nicht so viel, dass man deswegen eine Entscheidung beeinflussen lässt”* (Interview D, 2018, lines 72-76). This means that the researcher would take a look at the list when deciding between two journals and would choose the one that is listed but adds that the premium would not be the basis for taking a decision in the first place. This explanation, no statement on this matter at all, or a statement of no primary orientation with the FJL for publishing account for two thirds of the interviewees, while one third aligns their publishing choices with the list, which can be considered as being the first indication of perceiving the premium system as supportive.

#### 4.1.2.2. *Self-determination: no support perception*

Attaching to the above identified factor of support perception, this category describes the perception of the premium as not being supportive when considering self-determination. The incentive has only very little or no relevance for some interviewees, who are the two thirds referred to above. Some of them choose the journals only according to their pre-existing criteria, which are, for example, to approach other researchers who should read the paper (Interview A, 2018, lines 147-150); in fact, one researcher explicitly describes

the premium as not being relevant (Interview B, 2018, line 76); or others would not publish according to the list as it would not be their primary criterion for choosing the journal (Interview D, 2018, lines 55-56; Interview F, 2018, lines 90-93; Interview H, 2018, lines 117-124).

#### 4.1.2.3. *Self-determination: control perception*

The prerequisite for the allocation to this category would be that publishing according to the list would control the researcher's behaviour, in combination with perceiving it as controlling – that is, having the feeling of “having to” follow this behaviour, thereby limiting the personal freedom to choose the journals that fit their own research criteria. It can be assumed that having the only publishing orientation be the FJL, even though it does not fully comply with the previous criteria, does not decrease or crowd-out intrinsic motivation, unless this orientation is perceived as limiting autonomous decisions and to be controlling the researcher's own behaviour. However, this situation cannot be found in any of the responses of the interviewees. Concerning control perception connected to intrinsic value being impaired by the premium system, only an indication by one researcher could slightly indicate such a crowding-out effect, by saying that it would be foolish to give the premium to this very researcher, as the incentive for publishing is already very high and intrinsically based (Interview H, 2018, lines 169-172). Aside from this example, the feeling of a decrease in autonomy due to the system was not triggered by the premium and thus no crowding-out effect was observed.

The next part of the analysis involves the second component of the factor *support perception*, namely **self-esteem**.

## SELF-ESTEEM

**Table 5:** Categories and sub-categories of the independent variable *support perception: self-esteem*

CATEGORIES	SUPPORT PERCEPTION	NO SUPPORT PERCEPTION	CONTROL PERCEPTION
SUB-CATEGORIES	APPRECIATION & ACKNOWLEDGEMENT	No mention	No mention



	SENSE OF ACHIEVEMENT		
	ACCEPTANCE		
	INCENTIVE TO SUBMIT		

#### 4.1.2.4. *Self-esteem: support perception*

The possible values of the categories “no support perception” and “control perception” were of no importance, as none of the interviewees described the premium system as not increasing or decreasing support perception in terms of self-esteem. Rather than providing that answer, those not perceiving it as enhancing support perception in terms of self-esteem made no mention of it at all.

#### **Appreciation and acknowledgement**

The other factor for considering the premium system as being supportive is if it improves self-esteem by perceiving it as an appreciation from the faculty and an acknowledgement of one’s own competence and research skills, especially as a symbolic gesture. One respondent said, “*Es ist einfach schön, wenn man irgendeine Art von Anerkennung bekommt. Normalerweise kriegt man nicht sehr viel Anerkennung in der Wissenschaft, [...]*” (Interview D, 2018, lines 54-56). This means that it would be nice to get any kind of acknowledgement because this would not be common in the science sector – an opinion that emphasises the meaning of the premium system for the one’s own work in relation to self-esteem and support perception. Or, another interviewee said that it would be nice, especially also as a symbolic gesture, to get the appreciation: “*Ich meine, es ist schon irgendwie nett, [...], so auch symbolisch gut, auch die Anerkennung zu haben sozusagen*” (Interview F, 2018, lines 72-73).

#### **Sense of achievement**

Another factor in increasing self-esteem through the premium system can be attributed to feeling a sense of achievement by managing to publish a paper in a high-quality journal that is listed in the FJL. Moreover, this achievement of a good publication was referred to by one interviewee as creating something sustainable – something that lasts and can be written into one’s CV (Interview C, 2018, lines 157-159). In addition, a respondent saying

that the incentive system would challenge researchers by prompting them to present the research results in a particular manner and that it would help turn the paper in a “better direction” (Interview G, 2018, lines 194-198), can be seen as an expression of the system enhancing self-esteem.

### **Acceptance**

Yet another factor in feeling a sense of self-esteem is the acceptance one gets from international colleagues by doing good and visible research, as a way of getting invited to conferences and talks (Interview I, 2018, lines 111-116).

### **Incentive to submit**

Another reason for support perception in terms of self-determination is that the system provides an incentive to submit the paper to one of the journals on the list (Interview G, 2018, lines 218-220).

#### *4.1.2.5. Effects on intrinsic motivation*

The most important factors being responsible for the premium system being perceived as supportive, are the *acknowledgement and appreciation* for the work of the researchers (accounting for the factor of self-esteem) – with nearly half of the interviewed researchers having expressed this as their viewpoint – as well as the *orientation of the publishing behaviour according to the FJL* (accounting for the factor of self-determination), which was clearly expressed by a third of the interviewees.

Following on from the discussion of the effects of the premium system on extrinsic motivation above, what does this mean for intrinsic motivation? How does the premium system affect motivation through the factors described? This is being roughly evaluated in order to explain how the premium system affects motivation in more depth. As when looking at extrinsic motivation, some respondents clearly showed the tendency of only expressing factors positively influencing support perception both in terms of self-determination and self-esteem, while for others, this was not the case. These two tendencies will be weighed against each other, considering both components of support perception, self-determination and self-esteem.

### **Positive effect (motivation crowding-in)**

With how the researchers have stated their opinions having been analysed for support perception in terms of self-determination and self-esteem, the same can be done for enhancing intrinsic motivation. An example is the statement: “ [...] *da freut man sich dann, wenn man sich das verdient hat, wobei ich auch sagen muss, dass die Freude über den Erfolg größer ist, als die Freude über das Geld*” (Interview C, 2018, lines 227-230). This means that it pleases the researcher to have “earned” the premium and that the feeling of pleasure is greater than the joy about the money itself. Another example concerning the acknowledgement of one’s own performance and competence that could clearly also be regarded as increasing intrinsic motivation is the response: “*Ich meine, es ist schon irgendwie nett, [...] so auch symbolisch gut, auch die Anerkennung zu haben sozusagen*” (Interview F, 2018, lines 72-73), which means that it would be nice – also as a symbolic gesture – to get the acknowledgement. Thus, the connections between the variable *support perception* in terms of both, self-determination and self-esteem, and their according values clearly tend also to increase intrinsic motivation when perceived as positive.

For a crowding-in effect on intrinsic motivation, support perception requires accounting for both self-determination and self-esteem (Frey & Jegen, 2001). The combined effect of both factors was identified for *three* researchers (one third of the interviewees), while for the others, 1) either no mention about support perception was made, 2) only the factor *self-determination* can be assumed to be present by the FJL being consistent with the researcher’s own previously existing research criteria, or 3) the journals were not primarily chosen according to the list. Nevertheless, the premium system was perceived as an acknowledgement and thereby as enhancing self-esteem. The notion of support perception requires self-esteem to be enhanced in order to feel self-determination as being supportive, as self-determination only means that the research criteria according to the list are aligned with the researcher’s own criteria and thus do not limit the sense of autonomy. However, by referring to the premium as an acknowledgement and appreciation, as was described above, the premium could also be assumed to be increasing intrinsic motivation without being dependent upon enhancing self-determination – thus, without having the need to occur cumulatively. This suggests self-esteem could be a sole and independent factor being capable of raising intrinsic motivation. Making this assumption, more than 50% of the respondents would count as perceiving the premium system as supportive (either as enhancing self-determination and self-esteem, or only self-esteem).

### **Moderately positive | no effect**

Attaching to the above analysis of the premium system having a positive effect on intrinsic motivation, for the other two thirds<sup>3</sup> the premium system had only little or no effect when considering the support perception as the cumulative variable being consistent with self-determination and self-esteem. This can be supported by explaining that the main motivation for doing research would be to contribute something to the subject area, which would not need a faculty list, by one researcher saying, “*Ich bin motiviert, in meinem Fachgebiet etwas zu leisten, und dazu brauche ich nicht unbedingt so eine Faculty List*” (Interview B, 2018, lines 83-85).

### **Negative effect (motivation crowding-out)**

One researcher drew attention to the premium system to be rather only granted to young researchers without access to research budgets; thus, the researcher does not perceive the system as being supportive. However, a real motivation crowding-out effect would only be very weak and could be neglected.

### **Relationship between the variables**

For the two thirds of the researchers who have not been identified as perceiving a positive effect of the premium on intrinsic motivation, some of them do perceive it as an acknowledgement. However, with them not publishing according to the list, the factor of support perception cannot be ascribed to them. In addition, for this group of researchers, only a very slight or no positive effect on intrinsic motivation could be found. In comparison, the other third publishes according to the list, by this showing self-determined behaviour, as well as an enhancement of self-esteem, thereby showing support perception of the premium system. As for determining whether the behaviour of publishing according to the list – even though the research focus is slightly adapted to the requirements of the list (e.g., Interview C, 2018, lines 123-125; 128-131) – is autonomous or not, it seems that this would rather depend on whether publishing according to the list is perceived as limiting autonomy or not, independent of the actual change in behaviour. This emphasises Frey’s and Jegen’s (2001) proposition of the importance of the support *perception* for determining how it affects intrinsic motivation.

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<sup>3</sup> Or, half of the researchers interviewed when also regarding self-esteem as enhancing support perception (and thereby intrinsic motivation) as an independent factor

Taking an overall look at the results and statements made in the interviews and cited or summarized above, the relationship between support perception and intrinsic motivation seems to comply with what was expected: when looking at the *one third of respondents* who perceived the system as supportive (as publishing according to the list complies with their own research criteria), they perceive it in a positive way. In addition, the premium enhances their self-esteem by considering it as an acknowledgement of their own competences. This seems to imply that the relationship between support perception and intrinsic motivation is consistent with the expectations, namely that: “*The more the Publication Premia Programme is perceived as supportive, the more it enhances intrinsic motivation (motivation crowding-in)*”.

Though this case study does not allow “testing” the relationship, what should be emphasized is the relevance of perceiving the incentive system as *supportive* in terms of maintaining and furthering self-determination and regarding the premium as an acknowledgement and appreciation, and thereby fostering self-esteem. The feeling of acknowledgement of one’s own competence, motivation and performance seems to be an important factor for a positive perception of the incentive system. This is best exemplified by one researcher saying (Interview D, 2018, lines 54-56) that it would simply be nice to get any kind of appreciation, which is not common in science (“*Es ist einfach schön, wenn man irgendeine Art von Anerkennung bekommt. Normalerweise kriegt man nicht sehr viel Anerkennung in der Wissenschaft*”). However, the combination of this and perceiving the FJL itself as supportive, especially in terms of supporting their own research focus, seems to be even more important. This is congruent with the framework combining self-determination and self-esteem as suggested by Frey and Jegen (2001).

#### 4.1.3. Hypothesis 3

The third hypothesis was stated as follows:

H3: *If the Publication Premia Programme is perceived as unfair in relation to the colleagues, it negatively affects intrinsic motivation.*

**Table 6:** Categories and sub-categories of the independent variable *fairness perception*:

CATEGORIES	UNFAIRNESS PERCEPTION	NO UNFAIRNESS PERCEPTION	FAIRNESS PERCEPTION
SUB-CATEGORIES	No mention	NOT A CONVERSATION TOPIC	NO COMPETITION
		COMPETITION PART OF JOB	

#### *4.1.3.1. Unfairness perception*

Concerning the condition for an incentive system to work properly, namely to not be perceived as unfair, none of the interviewees made an explicit remark about the premium system seeming unfair.

#### *4.1.3.2. Fairness and no unfairness perception*

When addressing the topic of how the researchers regarded the premium system in relation to their colleagues, the only answers were either that 1) the premium system would not be discussed with others, 2) that competition in the science sector is part of the job, but not in a negative way, or 3) that the system would not be perceived as increasing competition, but that should someone win the premium, it would be celebrated (Interview G, 2018, lines 212-214; Interview I, 2018, 238-240).

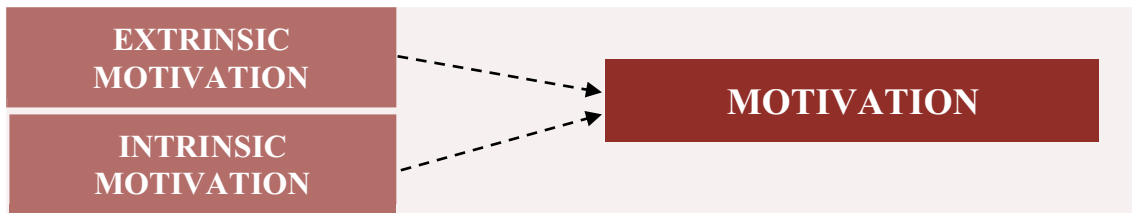
#### *4.1.3.3. Effects on intrinsic motivation*

From these results (the premium not being part of many conversations, competition being regarded as part of the job, or the system not being considered as unfair at all), it seems that the premium system is not perceived as unfair by those who express an opinion on that matter. Therefore, the expectations of the hypothesis do not seem to be supported. Later, after how the premium system influences extrinsic and intrinsic motivation has been analysed, the interrelations between these two types of motivation, and thereby the total effect on motivation, will be considered.

## 4.2. EFFECTS ON TOTAL MOTIVATION

To analyse the effects of the publication premium on total motivation, the results discussed above are summarised in a table, followed by an evaluation of how these two types of motivation seem to interrelate.

**Figure 6:** Effects of extrinsic and intrinsic on total motivation



Source: Own illustration

### 4.2.1. Main factors influencing extrinsic and intrinsic motivation

For an overview of what has been analysed in the previous chapter, Table 7 provides a brief summary of the most important factors influencing extrinsic and intrinsic motivation and how they tend to influence it – either in a positive way or not at all. In addition, a more detailed figure is presented, showing in which way these factors can be allocated to the single researchers, helping to understand what that means for how total motivation is affected.

**Table 7:** Summary of the analysis of the effects on extrinsic and intrinsic motivation

	Factors affecting extrinsic motivation	EXTRINSIC MOTIVATION	Factors affecting intrinsic motivation	INTRINSIC MOTIVATION
UTILITY ENHANCING	- Financial aspect (7/9) <sup>4</sup> - Signalling effect (1/3)	Positive effect: 1/3		

<sup>4</sup> Numbers in brackets: depict the part of interviewees (in relation to all interviewees) having brought up the topic

NO CHANGE IN UTIL- ITY	<ul style="list-style-type: none"> <li>- Only publication of value (1/3)</li> <li>- Inappropriate composition of the FJL (1/3)</li> </ul>	Moderately positive effect: 1/3 No effect: 1/3		
SUPPORT PERCEPTION <sup>5</sup>			<ul style="list-style-type: none"> <li>- <i>Self-determination</i>: Consistency with one's own criteria (1/3)</li> <li>- <i>Self-esteem</i>: Acknowledgement &amp; appreciation (4/9)</li> </ul>	Positive effect: 1/3 Moderately positive   no effect: 2/3
NO SUPPORT PERCEPTION			<ul style="list-style-type: none"> <li>- No relevance (2/3)</li> </ul>	

The table only integrates the most important factors, those mentioned by more than one third of all the interviewed researchers. It should be noted that, for some of the categories, the interviewees were not explicitly asked about them, but they brought them up by themselves when asked broader questions about the issue.

This section has been an overview of the most relevant factors through which the premium system influences motivation and, through that, showing how many of the interviewees brought up these factors, combined with the evaluation of how these factors tend to influence motivation. What should be noted and emphasized is that, of the above-outlined factors, the *financial aspect*, the *signalling aspect* and *acknowledgement and appreciation* of the one's own competence through the premium system are not only factors through which the system affects motivation, but they represent aspects of how the system influences the researchers' motivation going beyond the pre-existing motivation provided by the fact that their career incentives require good publications. However, for a more detailed demonstration of how the individual researchers perceive these aspects and of how this shows evolving groups, Figure 7 provides an illustration to facilitate a better understanding of the interrelation of extrinsic and intrinsic motivation.

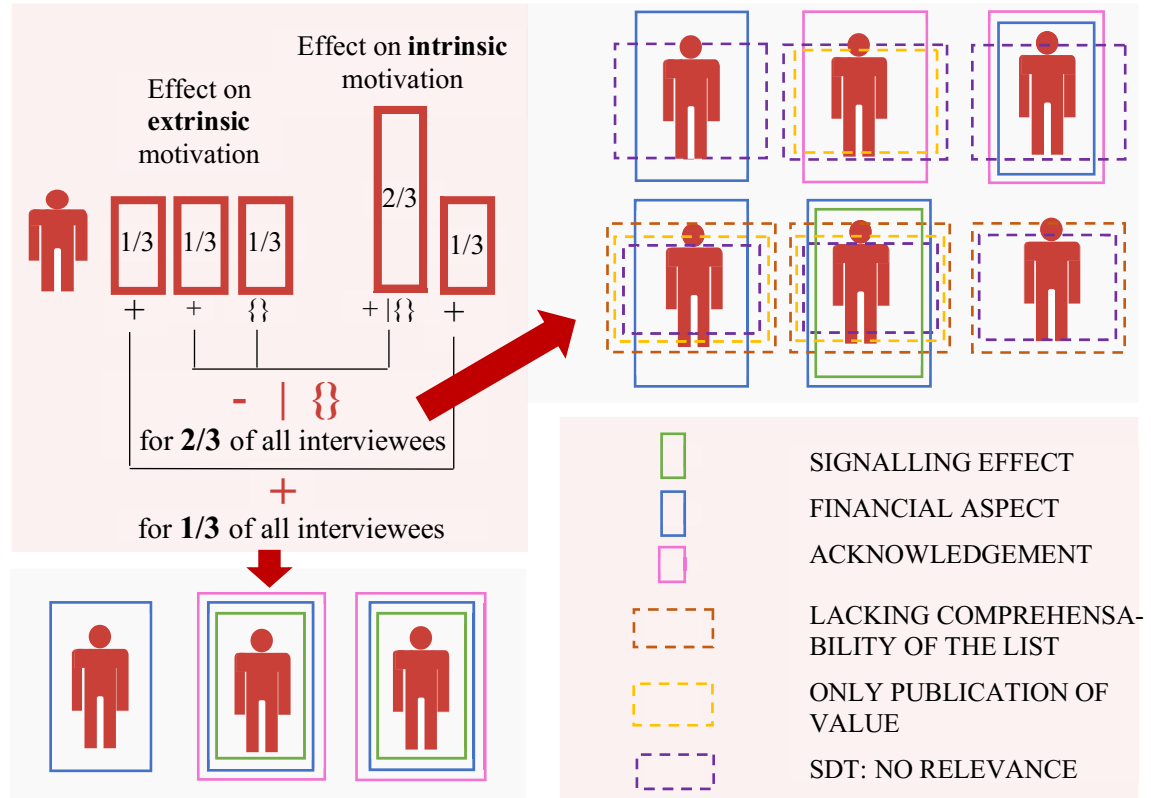
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<sup>5</sup> Increase in self-determination and self-esteem



Figure 7 visualizes the factors and how they can be allocated to the individual researchers, with integrating the discussed effects on extrinsic and intrinsic motivation from the previous section. The upper right and the lower left sections of the figure show the most relevant factors, specifically sub-categories of the variables *utility* and *support perception*, whereby those positively enhancing the variables are depicted by vertical rectangles surrounding the researcher illustrations, and the ones neither changing utility nor supporting perception by horizontal rectangles. This illustration should provide an overview of the allocation of the perceived factors to the individual researchers, for whom the publication premium system was either shown to be 1) positive in affecting both extrinsic and intrinsic motivation, or 2) only slightly positive or not changing the perception of utility or support. It should be added that for the latter grouping of researchers, even though the total effect is only slightly positive, some of them do perceive the premium system as a “goody”, a *signalling effect*, or as an *acknowledgement of their motivation and competence*. As having addressed, for them, these positive perceptions and effects on motivation seem to be weakened by the other factors, which are shown by the horizontal rectangles.

**Figure 7:** Effects on motivation and illustration of individual researchers



Source: Own illustration according to the allocations to the categories of Appendix 4<sup>6</sup>

<sup>6</sup> + positive effect; + moderately positive effect; {} no effect; - negative effect; | or

However, the question remains: what do the relevant factors through which the incentive system affects motivation, as well as the allocations of the perceptions about the premium system, mean for total motivation?

#### 4.2.2. Interrelations of extrinsic and intrinsic motivation

The previous analysis has shown the factors through which the incentive system affects motivation and how they affect extrinsic or intrinsic motivation.

Two thirds of all interviewees, as discussed above and summarized in Figure 7, mentioned positive as well as negative aspects concerning the premium system and motivation, thereby weakening the overall positive effect on motivation and making it difficult to determine and evaluate the overall effect on motivation for those researchers.

However, what the analysis clearly shows is that the remaining *one third of* interviewees perceives *only positive aspects* in connection with the premium system and these seem to positively affect motivation. They mainly only perceive positive aspects of the premium system, they publish according to the FJL and, for them, both intrinsic and extrinsic motivation have been shown to be high.

Thus, the third of all researchers perceiving a positive effect on intrinsic motivation are identical with the ones perceiving a positive effect on extrinsic motivation. This indicates that:

- the relationship between extrinsic and intrinsic motivation seems to be as such that both would need to be high for an overall positive influence on motivation;
- the factors in relation to support perception impacting intrinsic motivation would be relevant for a positive perception of the whole system – as was assumed by the critics of the classical economic approach that only considers utility maximization;
- for this overall positive effect, as expected, a combination of the two different criteria would need to be met – namely, that the incentive system would enhance utility and support perception in order to increase extrinsic and intrinsic motivation; and that
- this combination of the aspects, perceptions of them, and their effects on extrinsic and intrinsic motivation should not be neglected when designing an incentive system to ensure it will function well.

What should be noted, on the other hand, is, that this positive overall effect has been clearly shown to be of relevance for *a third* of the researchers, while for the other *two thirds*, different, controversial aspects seem to diminish the positive influences of the incentive system. The system seemed to cause only a very weak positive effect on motivation for five researchers, and no increase at all for one – splitting the interviewees into **two main groups**. The reasons for this will be investigated and interpreted in the following section.

However, before proceeding with the interpretation, a brief look at possible differences in the results will first be taken.

#### 4.2.3. Differences in the results

Even though regarding real differences between groups, such as gender, is based in quantitative research and thus cannot be part of this qualitative study, the tendencies of three characteristics can be addressed: namely, between whether the premium has already been won or not; the time horizons of the contract (fixed-term or tenured), and the different departments.

##### 4.2.3.1. *Premium*

Regarding the premium, the results only indicate that the third of the researchers for whom the premium system seems to have a positive effect on motivation had already won the premium. Of the others, the number of those already having won the premium and those who had not yet is the same.

##### 4.2.3.2. *Contract*

Concerning the time frame of the contract, two thirds of the interviewed professors and fixed-term professionals had already won the premium, one third had not yet. Between the two contract types, it can only be seen from the interviews that the perception of the existence of the premium system was higher among the professors than among the fixed-term staff, as the professors seemed to perceive it to be more important to express their

opinion on the system. However, the results on the effects of the system on motivation do not show any differences between fixed-term and tenured researchers.

#### 4.2.3.3. *Departments*

Like with the other characteristics, department-specific aspects cannot be detected, since although the sample includes researchers from the different departments, these departments are highly heterogeneous, and therefore the sample is not capable of representing departments or subject areas.

Within this study, it is not possible to draw any more conclusion about differences between distinct groups.

## 5. INTERPRETATION

What could be the reason for some researchers perceiving the premium system as enhancing motivation, while others do not or perceive it to only slightly enhance motivation?

This section will aim to answer this question; first, focusing on an interpretation of the analysis of the grouping showing little or no effect on extrinsic and intrinsic motivation, followed by a discussion of the motivation-enhancing effect.

### 5.1. LITTLE | NO EFFECTS ON MOTIVATION

As was seen in the analysis, about two thirds of the researchers meet the criteria for only perceiving little or no effect of the premium system on extrinsic and intrinsic motivation.

As the main reasons for that, the following factors have been identified:

- they either do not publish according to the FJL, but rather according to their own criteria, which can be partly explained by the list not being suitable for all of them; and/ or
- the incentive for publishing is already present.

In search of an interpretation of this, two major areas of explanations have been identified:

1. the **research system** in which the premium system is embedded and
2. the **inappropriateness of the FJL** for the specific subject area of the researcher.

The *first* of these will be discussed in the next section.

### 5.1.1. The research system

An understanding of this could be gained by regarding the premium system in a broader sense, namely within the whole system within which it is implemented. During the interviews, the interviewees either addressed the research system themselves, or during the course of the interview they were asked about it in order to focus the interview to the role of the premium system. The questions proceeded with the following logic:

- first, the researchers were asked what they like about their work and what they consider to be important – thus, about their intrinsic motivation;
- second, they were asked to talk about their future career path and what following it would require from them already at present, whereby publications and the premium system were relevant;
- third, their intrinsic motives and how they could align them with the system were of later interest as a result of their previous answers.

When asking questions about these topics aimed at getting insights into the role of the premium system, the researchers not only discussed the premium system, but also the whole system in which it is embedded. As this discussion of the whole system could be an interpretation of the perceptions of the premium system, the aspects pertaining to the system and its perceived effects that were addressed during the interviews will be explained in more depth in the following section. The first to be addressed will be the intrinsic motives of the researchers, which could play a role in understanding the effects of the system on motivation and the role of the premium system within it.

#### 5.1.1.1. *Intrinsic motives for conducting research*

Table 8 shows the intrinsic motives of the researchers, with interesting topics, the freedom to choose research and teaching topics, the time planning freedom and making a contribution to society being mentioned most often. One interviewee expressed the interest in

researching as having fun coping with data and making a story out of the data (Interview B, 2018, lines 25-27). As the answers of the interviewees were very varied and encompassed many of the elements listed in the table, as well as the fact that they answered in a manner expressing joy for their work, a high degree of intrinsic motivation for conducting research can be assumed.

**Table 8:** Intrinsic motives of researchers

INTEREST & CHALLENGE	<ul style="list-style-type: none"> <li>- varied and challenging work</li> <li>- interesting topics</li> <li>- interesting people</li> <li>- applying skills</li> <li>- developing ideas</li> <li>- learning new things</li> </ul>	<p><i>„Mir macht es großen Spaß mit Daten umzugehen, und mir macht es großen Spaß, aus Daten eine Geschichte zu machen.“</i> (Interview B, 2018, lines 25-27)</p>
AUTONOMY	<ul style="list-style-type: none"> <li>- freedom in research and teaching</li> <li>- autonomy in time management</li> <li>- free choice of topics</li> <li>- no guidelines for methods, topics, answers</li> <li>- taking time for reflections on the topic</li> </ul>	
SOCIETAL INTERESTS   PURPOSE	<ul style="list-style-type: none"> <li>- interest in societal topics/problems</li> <li>- making a contribution to society</li> </ul>	

Sources: Interview A, 2018, lines 14-17; Interview B, 2018, line 12, 15-17, 32-33; Interview C, 2018, lines 25-29, 31-33, 37-47; Interview D, 2018, lines 9-12; Interview E, 2018, lines 12-14; Interview F, 2018, lines 6-12; Interview G, 2018, lines 9-12, 21-29; Interview H, 2018, lines 9-14, 16-29; Interview I, 2018, lines 30-37

#### 5.1.1.2. The research system and its effects

Concerning the research system, *competition* was brought up by some of the interviewees, especially for positions like post-docs and professorships. This requires young researchers with *fixed-term contracts* to publish many papers in internationally well-ranked

journals, to build networks and to apply for third-party funding – all in an effort to improve one's CV for the next job application (e.g. Interview A, 2018, lines 98-104; 275-278).

This situation of competition has been identified as raising following concerns:

- the scope of research is narrowing down to smaller subject areas (unlike the educational ideal suggested by Humboldt), implying that the generation of broader knowledge is diminishing and that articles on these focused topics are not always read by the relevant decision makers;
- the autonomy of choosing one's own research topics is limited by trends that determine the current research, meaning that only a specific type of knowledge is being generated and topics are chosen according to what can be published;
- the publication pressure can result in a priority of research quantity over quality;
- teaching and public relations work is being neglected by many researchers since the main focus is put on researching and publishing;
- the difficulty of coping with the rejection of a paper by the reviewers of a good journal; and
- the power these reviewers gain by taking decisions of whether a paper will be published in a good journal or not (e.g. Interview A, 2018, lines 234-236; Interview B, 2018, lines 38-45, 54-59, 132-161; Interview F, 2018, lines 141-165; Interview H, 2018, lines 205-221).

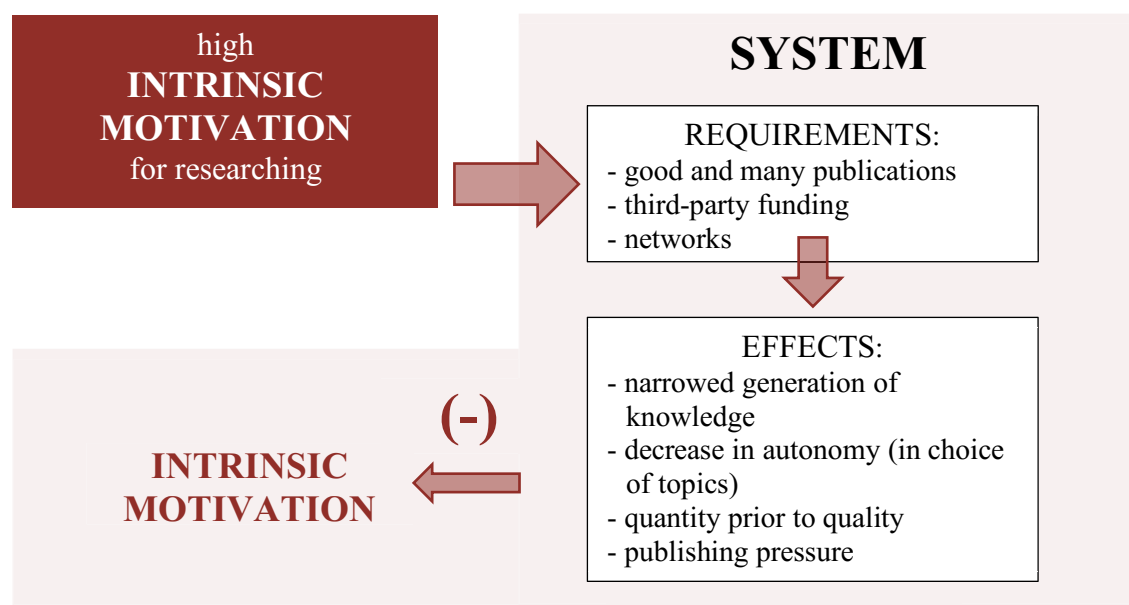
*„Wenn Sie einen Literaturüberblick schreiben, über irgendein Thema, ist ja schon ziemlich wichtig, damit man weiß, „wie ist denn der Stand der Forschung?“. Da und da stehen wir, das wurde publiziert, das wissen wir noch nicht, das wissen wir ganz sicher, da gibt es noch Forschungslücken – finde ich elementar wichtig. Macht aber überhaupt keinen Sinn, so etwas zu schreiben, weil das kann man nicht gut platzieren. Das kann ich maximal auf B-Niveau irgendwo platzieren, da fehlen dann aber die Anreize, weil das so ein großer Aufwand ist, das zu tun. Sich durch die ganze Literatur zu wühlen, und man muss wirklich schauen auch, dass alles da drinnen ist. Es ist wirklich ein großer Aufwand, ich muss das alles lesen, ich muss das zusammenfassen, und so weiter und so fort. Und dann kann ich es aber nicht gut publizieren. Das ist ein Beispiel dafür, wie widersprüchlich das eigentlich ist, dieser immense Publikationsdruck. Dass halt alle versuchen, in möglichst guten Journals zu veröffentlichen und da dann eben auch nur eine bestimmte Art von Wissen generiert wird (Interview B, 2018, lines 98-111).“*

These concerns are examples of how this publication practice causes only specific knowledge to be generated and was explained by one researcher as follows: In order to become familiar with state-of-the-art research about a specific topic, it would be of high relevance to write a literature review on that very topic – an elementary task for finding research gaps and a starting point for new research on a topic. However, doing so would not be practical, as it could not be published at a high level. Therefore, there is no incentive to put effort into writing such a review.

### 5.1.1.3. *Intrinsic motivation within the research system*

As having shown, the intrinsic motivation of the researchers to conduct research is very high, mainly because of their interest in the subject areas, the time management flexibility, the autonomy in research and teaching, and the aim of contributing to society. However, the system in which the researchers – and especially those with a fixed-term contract – operate has been described as not fully granting them the possibility of conducting research driven by their intrinsic motives. To put it bluntly, the competition and the career incentives requiring them to focus on specific research areas and on publishing in the established journals in their subject areas could undermine the basic interests and motives which brought them to choose to become researchers and, thereby, their intrinsic motivation. This relationship between the system and motivation is illustrated in Figure 8.

**Figure 8:** Intrinsic motivation within the system



Source: Own illustration



Though the system explained above seems more to concern researchers with a fixed-term contract than professors, the perception of the system of the latter ones is similar: although they no longer perceive the same pressure to publish since they are not in a fixed-term contract, the system described still applies for them, too. The requirements and effects addressed also apply for them, but based on a different reasoning: for them, the incentive to publish in good journals has been described as being maintained either

- for being visible,
- to show that their research matters,
- to have a sustainable impact,
- to be perceived and accepted by international colleagues, and thus, be invited to conferences and talks, and
- simply because publications are relevant in the science sector (Interview H, 2018, lines 71-84; 86-110; 117-119; Interview I, 2018, lines 91-102; 105-135).

With these references as to why publishing is perceived by professors to be important, it is shown that professors do not express perceiving publishing in a good journal as a pressure or necessity for their future career, but rather as a means to present their work.

Consequently, and taking a step back, a broader look at the research system could have been taken. What, then, does this broader insight into the world of researchers contribute to explaining the effects of the premium system on extrinsic and intrinsic motivation?

#### *5.1.1.4. The premium system within the research system*

As the premium system is embedded into the entire system in which the researchers are integrated, the system could contribute to explaining the effects of the premium system on motivation, especially for young researchers in a fixed-term contract. The research system and its effects, as described above, allow the drawing of two conclusions about the premium system and why it might only have very low positive effects on motivation, which will be discussed in more detail below.

#### **Effects on extrinsic motivation**

The research system with its career incentives and fixed-term contracts for young researchers has been shown to require good publication in order for young researchers to get a future position, or for professors to maintain their position: that is, to be noticed by

international colleagues and simply to remain visible. Thus, the incentive to publish in good journals within the research system is already present, without the premium system providing much more additional utility or incentives. Extrinsic and intrinsic motivation are already high as a result of career incentives, but also in order to be accepted among researchers and make one's own research visible and, thus, to be able to make a contribution to society. To accomplish these things, publications in internationally high-ranked journals are simply necessary.

As was already addressed, some of the researchers have also delivered the explanation during the interviews that publishing is the most important component within the research system and this profession –the possibility to decide autonomously upon what to do and what is more joyful does not exist. When being a researcher, this is an integral part of the profession, having been expressed by the following quotation:

*„Es gibt ja auch Publikationsprämien, die man ignorieren kann. Selbst wenn die hoch wären, könnte man immer noch sagen, okay, ich verzichte auf das Geld, dafür mache ich lieber, was mir Spaß macht, aber das kann man halt da nicht machen, weil da gibt es nur die Möglichkeit, zu publizieren, oder auszusteigen. Da kann man halt nicht sagen, ich nehme jetzt weniger Geld oder so, sondern, ich habe keine andere Wahl, es ist gar nicht anders möglich, wenn man in der Wissenschaft ist, muss man so sein (Interview F, 2018, lines 147-152).“*

As far as this helps to explain the effects on motivation only to a marginal extent, the embedded nature of the premium system within the research system could also explain influences on intrinsic motivation.

### **Effects on intrinsic motivation**

The analysis has shown that, for some, the premium system is perceived as an acknowledgement of their competence. However, on the whole, when integrating self-determination into the framework according to the expectations developed based on literature (Frey & Jegen, 2001), for about two thirds of the interviewees, the premium system has little influence on intrinsic motivation. However, there have not been many indications of the premium system being perceived as negatively influencing intrinsic motivation (with the one exception having been addressed) and thereby being perceived as not being supportive. Nevertheless, here the effects of the research system could become involved: as illustrated in Figure 8, the system entails the possibility of decreasing the intrinsic motivation of some researchers first, by limiting the researcher's autonomy in choosing topics

according to their own interests, and second, by diminishing the sense of purpose behind the initial interest of researchers to contribute to society with their discoveries in research. Hence, the system itself with its focus on publications could bear the burden of causing this effect – relieving the premium system from a possible crowding-out effect on intrinsic motivation because according to the expectations (incorporated into Hypothesis 2), the system would neither require a researcher to publish according to the list with this behaviour not being consistent with their own research criteria; nor would it reduce the self-esteem. Accordingly, for the majority of those on which the premium system has little or no effect, they rather are among those having mentioned the system itself as diminishing some of their initial intrinsic motives.

These possible explanations are summarized briefly below in order to discuss what these insights could imply.

### 5.1.2. Possible implications for the Publication Premia Programme

As deduced from the interviews and described previously, the main reasons for the premium system having only little influence on enhancing motivation for some fixed-term researchers could be the embeddedness of the premium system in the research system or that the journals on the list simply do not fit for their subject area of research. The latter explanation has not yet been addressed in more depth, but it should be pointed out that it cannot be linked to the research system, nor is it a specific concern for some researchers from different departments of the faculty sharing the same characteristics.

In being more precise about the interviewees not perceiving much of a positive effect, this is what they seem to have in common:

- they do not publish according to the FJL;
- they either do not fully comply with how the research system works, and/or
- consider the incentive for publishing to be very high within the research system anyway, in addition to one or both of the first two upper points; or
- they do not find the relevant journals for their research area on the FJL (this accounts for one third of all the researchers interviewed).

For those who do not find their journals on the list while agreeing that publishing is a part of what they do to make their research visible, the premium system could have two kinds of implications:

- they could start tailoring their research in order to comply with the FJL, which could lead to a reduction in self-determination by reducing their autonomy in choosing their research topics and thereby causing a crowding-out effect;
- or they could do nothing about it, which would continue to preclude them from getting the publication premium. This consequence could bear the risk of them perceiving the system as unfair, as other researchers whose relevant journals are on the list would keep winning the premium. As was outlined, the assumption of people comparing themselves with others' income levels (relative income, Clark & Oswald, 1996) could still matter, although since the interviewees did not explicitly mention this topic, this expectation could not be supported. Only the one interviewee, identified in the analysis, who emphasises the system being important for signalling the focus on quality in research, brought up the idea of only granting the premium to young researchers without their own research budget.

For some researchers, their research focus does not seem to be complying with the FJL – although the assumption about the effect stated in Hypothesis 3 could not have been supported with this case study – it is suggested at this point to keep the possibility of the existence of such an effect in mind.

## 5.2. POSITIVE EFFECTS ON MOTIVATION

The one third of the interviewees on whom the premium system seems to have positive effects has following characteristics in common:

- they can identify themselves with the research system;
- the relevant journals of their research area are on the FJL;
- they have already won the premium;
- they perceive the premium system as being supportive in terms of self-determination and self-esteem: that is, the criteria for publishing in the journals of the FJL are consistent with their own research criteria (autonomy given in the sense of Frey & Jegen, 2001) and the system being perceived as an acknowledgement of their own competence increases their self-esteem; and

- they perceive the system as enhancing utility by being financially supportive and signalling what is expected from the researchers and valued by the faculty.

These characteristics of the researchers perceiving the premium system as increasing motivation could demonstrate *how an incentive system could work properly and successfully* when meeting the criteria listed above.

These discussions could imply that the perception of the researchers *within the research system*, in combination with whether the important journals in their subject area are *on the FJL* seem to be of high relevance for explaining the effects on motivation in addition to the *factors* of the first and second hypotheses.

Now that the results of the analysis have been discussed and interpreted in the process of searching for explanations of why the effects of the premium system on extrinsic and intrinsic motivation have been shown to be either positive or negative, the findings will be summarised and discussed in the following section in relation to the theory and the research question.

## 6. CASE SUMMARY

This case study has aimed to understand how a performance-based incentive system affects extrinsic and intrinsic motivation, and which conditions it would need to meet in order to be successful.

In order to evaluate how this study has contributed to this aim, first, a brief summary of the theoretical part will be provided for understanding the underlying rationale of the topic of motivation and the research problem aimed at becoming answered. Second, the most important results and their possible interpretations will be outlined, aligned with and structured according to the central idea of answering the two research questions of how the premium system influences motivation, and of how this could help to provide a suggestion for how a performance-based incentive system could be successful.

## 6.1. ESSENTIAL THEORETICAL ARGUMENTS AND RE-SEARCH RATIONALE

How to motivate employees? One simple question – one simple answer, when considered from the classical economic perspective that derives from the principal-agent theory. This theory treats the problems arising between a principal – e.g., an employer – and an agent – e.g., an employee. Incentives for agents do work as long as they increase an agent's utility, meaning that they enhance the agent's motivation and thereby the agent's performance (see e.g., Jensen & Meckling, 1976, p. 308; Baker et al., 1994, pp. 1125-1126). However, this question is not as easy to answer when asking scholars from other disciplines. For example, in the 1970s, psychologists claimed there to be the possibility of incentives having negative effects on intrinsic motivation, an argument on which many others based further research, focusing on the idea that incentives will only have their intended effects if they meet specific conditions. In brief, some psychologists suggest that an incentive system only works when it does not limit autonomy and self-determination (e.g. Gagné & Deci, 2005, pp. 333-336). In turn, some economists have seized on this idea and have determined that performance-based incentive systems need to be perceived as supporting in terms of self-determination and self-esteem in order to increase intrinsic motivation (motivation crowding-in, Frey & Jegen, 2001). This is a necessary condition so that they do foster autonomous behavior and generate a feeling of being acknowledged for one's own competence and motivation. Another argument could be integrated into this concept, focusing on fairness perception based on relative income, meaning that people compare their income with that of others when evaluating their own happiness (Clark & Oswald, 1996).

If these different approaches to finding systems to motivate employees agree on using incentive systems – what should such systems look like? What should they take into account, and which conditions should they meet?

The first question, about how incentive systems should be designed, has been of interest for some decades now in economic research, with a focus on a solution that prevents employees from taking advantage of the system (e.g. engaging in gaming or other undesired behavior) as a side effect of them striving for maximizing utility.

Accordingly, the suggested design is as follows:

- incentives should be *low-powered* in terms of their level, because if they are not, in multitask situations, they could induce employees to neglect other tasks; and
- there should be *subjective and objective performance measurements*, to avoid side effects such as employees behaving inappropriately in order to receive the incentive (see e.g., Baker, 2000, p. 415; Holmstrom & Milgrom, 1991; Holmström, 2017, pp. 1765-1769).

Assuming these design proposals are met, which conditions concerning the perception of the system by the employees should a system meet, in addition? This is the question accompanying this case study, with the expectation that the results will be a combination of conditions suggested by the disciplines outlined above, such as

- increasing utility (economic perspective);
- being perceived as supportive in terms of self-determination and self-esteem (psychological and economic perspective, see e.g., Gagné & Deci, 2005; Frey & Jegen, 2001); and
- not being perceived as unfair in relation to other employees (Clark & Oswald, 1996).

This expectation has been investigated in this case study by looking at a performance-based incentive system, namely the Publication Premia Programme for researchers publishing in specific prestigious journals listed in the FJL of the Faculty of Business, Economics and Statistics of the University of Vienna. It is a system that has been determined to meet the criteria of being low-powered, and having the characteristics of measuring performance in an objective and subjective way.

The question of how an incentives system could be successful, this should be determined by providing answers to the following research question:

*How does the Publication Premia Programme influence the motivation of researchers at the Faculty of Business, Economics and Statistics of the University of Vienna?*

Working from what has been proposed from literature, the question suggests the following hypotheses:

H1: *If the Publication Premia Programme increases the utility of the researcher, it positively affects extrinsic motivation.*

H2: *The more the Publication Premia Programme is perceived as supportive, the more it enhances intrinsic motivation (motivation crowding-in).*

H3: *If the Publication Premia Programme is perceived as unfair in relation to one's colleagues, it negatively affects intrinsic motivation.*

This study has attempted to understand and explain

- how and through which factors the Publication Premia Programme influences extrinsic and intrinsic motivation;
- how these two types of motivation interact; and
- how the incentive system influences motivation as a whole.

In this way, the study could contribute to answering the question of how an incentive system could work and what should be considered when designing it.

A qualitative research design was chosen as the method to delve more deeply into understanding the interrelations between the incentive system and motivation. The selected researchers – mainly young researchers in post-doc positions, as well as some professors – were questioned in an interview lasting about 30 minutes, supported by a partly-structured manual. Their responses were categorized, evaluated, analysed and interpreted based on a qualitative content analysis following Mayring (2010, p. 13; pp. 92-109).

## 6.2. RESEARCH RESULTS AND DISCUSSION

The most important results from the theoretical section above will be summarized in this section and thereby structured in order to answer following questions:

1. *How and why does the Publication Premia Programme affect motivation?*
2. *Which implications could the results have for explaining how a performance-based incentive system could positively influence motivation and therefore be successful?*



### 6.2.1. Effects of the Publication Premia Programme on motivation

The first question should be answered by first summarizing the factors affecting extrinsic or intrinsic motivation and by how they influence total motivation and then interpreting the results.

#### 6.2.1.1. *Factors affecting extrinsic and intrinsic motivation*

In investigating the influences of the premium system on motivation, the main factors were expected to be utility, support and unfairness perception. The most important factors through which the premium system influences motivation were found to be the *financial aspect*, the *signalling effect* – meaning that the system reflects what is being aimed at by the faculty – as well as the feeling of one's own motivation and competence being *acknowledged*. At the same time, these three most relevant factors express how the system influences the researchers' motivation in addition to and going beyond their usual career incentives, which require good publications in any case.

However, in opposition to these positive factors, factors involving a negative perception of the incentive system were also raised by some interviewees. The most relevant negative factors were that only the *publication is of value*, meaning that the incentive to publish is present anyway; the *inappropriateness of the composition of the FJL*, with the most frequent explanation being that the relevant journals of the researchers were not included in the list; and *little relevance* of support perception in terms of *self-determination*, as active pursuance of publishing according to the list only occurred for one third of the interviewees.

Weighing these aspects concerning the factors utility and support perception against each other seems to lower the overall positive effect of the premium system on motivation as a whole for those interviewees who mentioned the positive and negative effects. This makes it difficult to evaluate a final impact for those individuals, who account for two thirds of the interviewees.

Thus, considering the overall effect of the premium system on motivation –integrating extrinsic and intrinsic motivation – **two groups** can be clearly identified. For one third of

the researchers the premium seems to enhance utility and is perceived as supportive, and thus tends to positively affect intrinsic and extrinsic motivation. For the other two thirds, the system does not seem to positively influence motivation, to a large extent because of the controversial aspects that have been mentioned. The possible reasons for this result are summarized in the next section.

#### 6.2.1.2. *Interpretation of the influences on motivation*

To refer to the second part of the first question - how can the results be interpreted?

A possible explanation is by regarding the publication premium system as being embedded in the overall research system, which is highly competitive, requiring a large number of publications in highly ranked journals. Young researchers with fixed-term contracts, especially, need to comply with these requirements. Concerns raised were that it provokes high publication pressure, that topics cannot be chosen independently, and that the generation of knowledge could be doubted – all of which, in turn, have the potential of undermining the initial high extent of intrinsic motivation of researchers.

This consideration of the premium system within a broader context could imply the following:

- *Effect on extrinsic motivation:* As the research system already requires good publications from young researchers to assist in their search for future jobs and from professors to make their research visible internationally, the incentive for publishing is already present, without the publication premium system providing much additional incentive or utility.
- *Effect on intrinsic motivation:* The premium system showed low positive or no effects on intrinsic motivation. However, the case being made in the literature that there could be a crowding-out effect on intrinsic motivation if the system is not perceived as being supportive in terms of self-determination and self-esteem (Frey & Jegen, 2001), has not really been supported by this case study. A possible crowding-out of motivation could take place, but only due to the research system itself (as, for example, the intrinsic motive of research autonomy cannot be fully pursued as expected at the beginning of one's career) and not the premium system.

### 6.2.2. Implications of the results

As described above, one main contribution of this paper has been the exploration and description of the *aspects and factors* through which the premium system influences extrinsic and intrinsic motivation, and *how they interrelate*. The main finding resulting from this analysis is, as was addressed in the previous section, that *two major groups* in terms of how the system affects total motivation can be identified. One third of the researchers held a very positive attitude towards the system, while the other two thirds brought up negative aspects relating to the system in addition to the positive ones, making it difficult to evaluate the total effect on motivation. What do these groupings show, and what does the grouping imply?

For the respondents having brought up positive as well as negative aspects (thus, aspects that do not enhance their utility much, nor their perception of the premium system as being supportive), the overall positive effect on motivation is moderated through the controversial aspects. Hence, the results obtained for these two thirds of the researchers do not contribute to answering the question of how an incentive system could be successful. Moreover, through this weakening effect on overall motivation, the increase in motivation from the premium system exceeding their usual career incentives is also lowered, thereby reducing the overall utility of the entire incentive system. This information could be of importance for the decision makers designing the system and will therefore be returned to again in the conclusion.

However, for the **remaining third** of the researchers, their results can contribute to understanding and explaining the *effects on motivation* and thereby on how a *successful system* could work. The implications of the results of this remaining third is addressed in the following section.

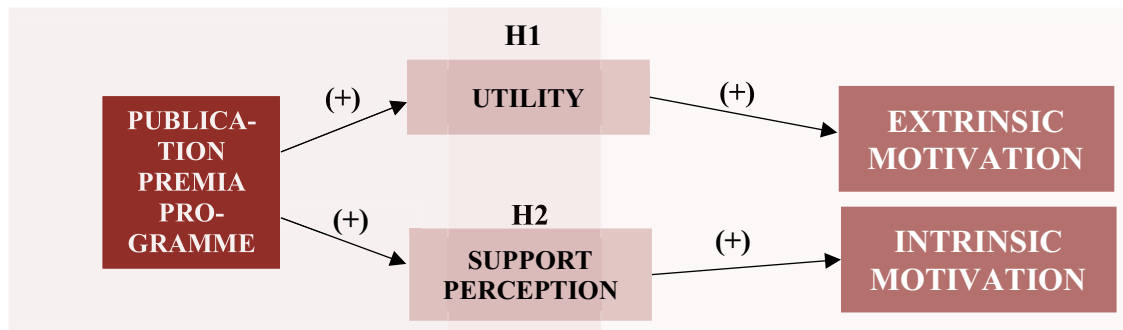
#### **Overall positive perception**

For the third of the researchers clearly indicating that, for them, the premium system positively influences both types of motivation, the expectation expressed in the two hypotheses as a *combination of conditions* from different research areas being necessary for a working incentive system tends to be supported by the results. Thus, by looking at what they have mentioned, the **expected relationship** of when the incentive system increases

utility and is perceived as supportive tends to be supported, showing these factors to positively affect both extrinsic and intrinsic motivation.

As no support could be found for the third hypothesis, the revised expectations which seem to be of relevance are visualized in Figure 9.

**Figure 9:** Revised Hypotheses



Source: Own illustration

When looking at the responses from those perceiving the premium system positively overall, the suggestion to **combine various perspectives** from different research areas has been shown to be useful in proposing an incentive system that could work successfully: it meets both the condition of *enhancing utility* – the classical economic perspective (e.g., Hölmstrom, 1979, pp. 75-80) – and that of sticking to the autonomy perception as part of SDT (e.g., Gagné & Deci, 2005, pp. 331-333). This latter condition required by some psychologists and integrated into the framework of *support perception* – a proposal by some economists combining self-determination and self-esteem (Frey & Jegen, 2001). Accordingly, a performance-based incentive system for researchers in the science sector meeting these criteria could be conceptualized by taking how those researchers perceiving the premium system as enhancing motivation in terms of both, extrinsic and intrinsic motivation, who show the following **characteristics**:

- they can find their relevant journals on the list of the incentivized journals;
- the system enhances their utility mainly because of the financial aspect and due to the signalling factor;
- they have a support perception of the premium system: in other words, the behaviour of publishing according to the list is consistent with their own research criteria and they feel acknowledged for their motivation and competence;

- they seem to identify themselves within the research system in which the incentive system is embedded.

This summary already leads to the end of the thesis, with the following concluding remarks closing the discussion.

## 7. CONCLUSION

This case study has contributed to looking more deeply into the interrelations of extrinsic and intrinsic motivation by investigating the effects of a performance-based premium system for publications on motivation. Thereby, the following aspects have been elaborated on and analysed:

- how the premium system is perceived by the researchers;
- how intrinsic and extrinsic motivation are affected and how they interrelate;
- what an incentive system should consider in terms of which conditions it should adhere to;
- which reasons could describe why the premium system is not perceived positively by all researchers.

### **Implications of the results for creating incentive systems**

Based on the results for those three researchers for whom the premium system tends to positively affect motivation, the following aspects are proposed to be considered and of use for designing an incentive system:

- different factors affecting how the premium system is perceived can become relevant, namely suggesting putting emphasis on 1) the financial aspect, but also mainly on 2) the signalling effect and on 3) the feeling of acknowledgement and appreciation of the own competence and of the effort putting into work;
- the relevance of intrinsic motivation to the perception of an incentive system as a whole, as it tends to be capable of weakening the intended effect of an increase in extrinsic motivation;
- for a positive effect of the incentive system, both, extrinsic and intrinsic motivation are important for making the system successful;

- a consideration of the system in which the incentive system is embedded and how it affects motivation is needed, as this can contribute to how the incentive system is being perceived.

As has been shown, how the interviewees perceive the premium system could contribute to understanding and explaining how a successful system could work and what it should emphasise.

However, as for the results from the remaining two thirds of the researchers, no definite suggestions as to how motivation is affected or how an incentive system should be designed can be made, as conflicting aspects were mentioned by them. On the one hand, some appreciate either the financial aspect of the premium or the signalling effect. On the other hand, some consider the publication itself to be much more valuable than the premium, or do not publish according to the list as it does not comply with their own research criteria. Thus, although they do perceive factors increasing their utility and being supportive, and therefore see the system as enhancing their motivation over and above their pre-existing career incentives that also require good publications, these additional motivational aspects are weakened and the overall utility only marginally enhanced. Considering this, to achieve a higher total utility of the publication premium system, there needs to be a stronger positive effect on motivation for this group.

Following up on this suggestion, the conflicting perceptions of this group of two thirds of the researchers could be ascribed to the composition of the FJL (if the researchers do not find the journals relevant to their research area on it) and to the whole research system, in which the premium system is embedded. Regarding what can be influenced by those implementing an incentive system, the following recommendation can be made: the FJL could be changed or adapted. For the researchers found to positively perceive the system, the composition of the FJL already complies with their own research criteria; this is not true for some of the others. Therefore, an extension of the FJL into other research fields could be proposed, aiming at raising motivation for more researchers and thereby achieving the intended effect. However, the composition of the list was only criticized by one third of the researchers, and there is the consideration of how the whole research system in which the incentive system is embedded could influence the way the premium system is perceived. These points raise the question of whether an adaption of the FJL would actually change the results and have a positive effect on more researchers – or to put it

differently, to have the intended effect on the majority of the researchers and thereby raise the total utility of the incentive system.

One final quote from an interviewee should be included to close the discussion. It refers to the possible effect of the whole research system on the perception of the incentive system, and the way that how one perceives the system could be explained by possible character differences between people. The researcher said that a balanced mixture of people would be good and required: the “light houses” who publish, but also those who would look after the students, as the students, in the future, will be those who represent us, and it would also be good for them to get managing positions in the economy and to be decision makers in our society. But this interviewee said those in the administration, third-party funding, and so on are also needed; that a balanced mixture is needed to sustain the competition:

*„Und das ist auch gut so, dass es so einen Mix gibt, weil, vor allem, wenn man das jetzt auf eine Fakultät bezieht, braucht man alles: wir brauchen die Leuchttürme, die publizieren, aber wir brauchen auch diejenigen, die sich um die Studierenden kümmern, weil die Studierenden sind später diejenigen, die in die Welt raus gehen und uns repräsentieren. Und wir möchten ja auch, dass die tolle Führungspositionen haben in der Wirtschaft, und Entscheidungsträger sind in unserer Gesellschaft und wir brauchen aber auch diejenigen, die uns in der Verwaltung und Administration, und Drittmitteln und so weiterbringen. Also wir brauchen eine ausgewogene Mischung, weil sonst glaube ich, kann man langfristig sich auch in diesem Wettbewerb nicht bestehen (Interview B, 2018, lines 187-197).“*

## **Limitations**

This case study has aimed to analyse and explain the influences of the publication premium system on extrinsic and intrinsic motivation, and to contribute to answering the question of what should be considered when designing incentive systems. Therefore, the results provide neither an evaluation of the quality or effectiveness of the premium system, nor an answer as to whether the system should be changed or not, but the results should have revealed problem areas arising in connection with the incentive system and how they are related to the perception of the system.

Moreover, the chosen size of the sample does not allow drawing conclusions about any *differences in the results* between different departments of the faculty, or between whether the premium has already been granted to a researcher or not. Furthermore, only

differences (which have been already addressed as part of the interpretation section) in perception of the research system between fixed-term and tenured researchers can be referred to. However, they do not contribute to explaining any differences between the two groups in perceiving the premium system either. Pursuing the aim of detecting differences between departments or contract types requires a quantitative design.

Further research suggestions with the objective of investigating the optimal design of a successful incentive system would be based on focusing not only on motivation, but also on how the premium system affects *performance*. However, as the system was only implemented in 2015, the amount of time between submitting to a journal and the publishing date can amount to several months, and as only a moderate number of researchers have been awarded the premium so far, a larger time span would be needed for conducting such a study.

Further topics of interest can be drawn from this case study and remain open for future research:

- though not discussed in depth within this thesis, further emphasis could be put on the factor of *fairness perception* in relation to the effects on motivation of a performance-based incentive system;
- as this case study has shown the importance of intrinsic motivation in a workplace setting in the science sector, a proposal *to amplify its integration into modern economic theories* is being made; and
- investigating whether and how the incentive system and the perception of the system in which it is embedded interact; what this perception depends upon, and which role preferences and intrinsic motives take therein.

*In hope of ...*

*... someone being intrinsically motivated to seize on this in further research...*

*...the end.*



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# APPENDIXES

## APPENDIX 1: ABSTRACT

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### GERMAN

Wie können Arbeitnehmer durch Anreizsysteme motiviert werden? Hierbei unterscheidet sich die klassische ökonomische Perspektive von anderen Ansätzen dadurch, dass Anreizsysteme bedingungslos funktionieren würden, während andere Ansätze intrinsische Motivation in das Rahmenwerk integrieren und Bedingungen in Hinblick auf die Wahrnehmung des Systems definieren. Diese Fallstudie untersucht die zwei letzteren Aspekte im wissenschaftlichen Sektor, indem Fokus auf die Frage gelegt wird, wie sich ein Publikationsprämienystem für WissenschaftlerInnen an der Fakultät für Wirtschaftswissenschaften der Universität Wien auf deren Motivation auswirkt, wobei erwartet wird, dass die Bedingungen aus der Theorie kumulativ für ein funktionierendes System erfüllt werden müssten. Als Methode wird ein qualitatives Design gewählt, um die Wahrnehmung der Prämie auf extrinsische und intrinsische Motivation zu verstehen und zu beschreiben. Die Ergebnisse zeigen, dass als wichtigste Faktoren für eine positive Wahrnehmung in Hinblick auf Motivation abgesehen vom finanziellen Aspekt die *Signalwirkung* und das Empfinden einer *Anerkennung* der eigenen Fähigkeiten durch das Anreizsystem eine bedeutende Rolle spielen. Damit wird angenommen, dass die Bedingungen aus den verschiedenen wissenschaftlichen Disziplinen für eine positive Wahrnehmung und somit ein funktionierendes Anreizsystem erfüllt werden sollten, nämlich das Anreizsystem als Nutzen erhöhend und unterstützend wahrzunehmen. Ein hoher positiver Effekt auf die zwei Arten von Motivation ist für ein Drittel der Befragten festgestellt worden, für den Rest sind diese positiven Auswirkungen durch negative Aspekte abgeschwächt.

### ENGLISH

How can employees be motivated by incentive systems? Hereby, the classical economic perspective is distinct from other approaches in assuming that the system would work out unconditionally, while other approaches would integrate intrinsic motivation into the framework and define conditions regarding the perception of the system.

This case study investigates these two latter aspects in the science sector by focusing on the question of how the Publication Premia Programme for researchers of the Faculty of Business, Economics and Statistics of the University of Vienna affects their motivation,

with expecting that the conditions outlined in theory would be required to be met cumulatively for a functioning system. A qualitative research design is chosen as method in order to understand and explain the perception of the premium on extrinsic and intrinsic motivation. The results show that besides from the financial aspect the most important factors playing a relevant role for a positive perception concerning motivation are the signalling effect and the perception of acknowledgement of the own competences by the incentive system. Thereby it is assumed that the conditions from the different research disciplines should be met for a positive perception and a working incentive system, namely to perceive the incentive system as enhancing utility and as being supportive. A high positive effect on the two types of motivation can be detected for one third of the respondents, while for the others, this positive effect has shown to be lowered by negative aspects.

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## **APPENDIX 2: INTERVIEW MANUAL**

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### **RECORDS**

Position of the interviewee:

Date of the interview:

Duration of the interview:

### **INTRODUCTION**

Thank you for taking time for the interview. I am writing my thesis (Master studies Business Administration) regarding the topic “work motivation in the science sector”. In particular, I am interested in the relationship between intrinsic and extrinsic motivation. Therefore, I am conducting interviews with researchers of the different departments of this Faculty, whereby I am especially aiming at young researchers. The project is being supported by the Dean and the Research Commission of our Faculty, who are interested in the topic in the



context of the ongoing debate concerning the Publication Premia Programme, although my research interest is much broader. The interview will last about 30 to 45 minutes. The information will be abstracted and anonymised afterwards. May I record the conversation for the purpose of later transcription?

Do you have questions beforehand?

1. How long have you been working at this Faculty?

## INTERVIEW QUESTIONS

2. What do you like about your work?
3. What do you consider as important for your work?
4. You are Post-Doc (Tenure-Track) – how long are you planning to stay here at this Faculty?
5. This means your career path continues elsewhere afterwards – what does that require from you already now? What does it mean for you? What do you consider as important thereby?<sup>7</sup>
  - *Role of publications and premium system within it*
6. *Publication Premia Programme:*
  - *perception of the premium system and possible effect on research behaviour (e.g. journal and topic choice)*
  - *perception in relation to colleagues winning the premium*
7. Premium system in context with the mentioned motivators:
  - *Research and publishing behaviour (according to the FJL): how does it fit with the motivators/ with what is considered as important?*
8. Have you already won/used the premium?

## SUMMARY | CONCLUSION | QUESTIONS

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<sup>7</sup> For professors: instead of questions 4 and 5: What are your future goals and plans? What does it require from you? (*Role of publications and the Publication Premia Programme within it*)

Table 9: Coding manual

Category	Definition according to literature	Sub-Categories	Definition of Sub-Categories	Common Example	Coding Rules
<b>C1: UTILITY</b>	Publication Premia Programme is perceived as useful, as to increase personal utility (the list and the premium itself)	C1.1: Utility enhancing	Publication Premia Programme is perceived as increasing utility and as a working monetary incentive	“Wenn ich es kriege, ja freue ich mich auch, man kann dann vielleicht Mittel flexibler ausgeben” (Interview H, 2018, lines 198-199).	Allocation to this category, if the person perceives any use of the incentive system in a positive way, thus the respective utility is being described. If the utility is not perceived as to be enhanced, allocation to C1.2 is carried out.
		C1.2: No Utility (Perception as no change in utility)	Publication Premia Programme is perceived as not changing utility	“Mir ist ehrlich gesagt die Prämie völlig egal” (Interview B, 2018, line 78).	Allocation to this category, if not in C1.1, meaning that the premium is not perceived as changing utility, which can e.g. pertain to the construction of the Faculty Journal List, or the level of the premium.
<b>C2: SELF-DETERMINATION</b>	Perception of the incentive system as being supportive in terms of self-determination	C2.1: Support perception (Self-determination)	Publication Premia Programme is perceived as supportive in terms of self-determination - if the behaviour (i.e. publishing according	“Ich richte mich einfach fachlich nach den Themengebieten. Es gibt andere Rankings, nach denen ich mich richte – aber unsere Fakultätsliste ist konsistent damit” (Interview G, 2018, lines 175-176).	Allocation to this category only if both criteria are met – that publishing according to the list does not limit their freedom in choosing the journals with their original intentions and that they perceive the behaviour to be part of being a

	<p>(freedom of action) (Frey &amp; Jegen, 2001, pp. 594-595; or e.g. described in Gagné &amp; Deci, 2005, pp. 334-335)</p>	<p>to the FJL) is autonomous, meaning that people do not feel forced to publish according to the list, but if it still allows them to publish following their own interests and intrinsic motives (support perception according to Frey and Jegen, 2001), <i>and</i></p> <p>- if people identify themselves with the behaviour, being aligned with their personal aims, or if they consider the behaviour as part of who they are and what they do (comparable to integrated and identified regulation: autonomy according to SDT, see e.g. Gagné &amp; Deci, 2005)</p>	<p>“Aber ich habe sie mir schon angeschaut, ich schaue schon danach, was wird geschätzt. [...] Die Liste ist mir wichtig und ist auch konsistent mit meinen Kriterien” (Interview G, 2018, lines 166-172).</p>	<p>researcher and what they are aiming for. If it does not limit their autonomy in choosing the journal but if it is not perceived as supportive (in a sense that they appreciate the system), or/nor as supporting their goals, then allocation to C2.2 occurs.</p>
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		C2.2: No support perception	Publication premium is not perceived as being supportive in terms of self-determination if it is not perceived as supportive and as not being aligned with their original goals.	“Ich denke, wenn man die Wahl hat zwischen zwei, dann würde man sich das anschauen, und würde sehen, „ok, da kriege ich jetzt mehr Prämie“, aber dafür ist es monetär auch nicht so viel. Es ist nettes Geld, aber nicht so viel, dass man deswegen eine Entscheidung beeinflussen lässt” (Interview D, 2018, lines 73-76).	Allocation to this category if - the system is not perceived as supportive and does not comply with their aims.
		C2.3: Controlling behaviour	If publishing according to the FJL is only done in order to get the consequence – hence, the premium (externally regulated behaviour); or, if it is not really perceived as being the own; if it controls the behaviour (introjected regulation), (Gagné, & Deci, 2005, p. 334).		If the choice of the journal is fully aligned with the list, controlling the behaviour in order to receive the premium.

		<p>C2.4: Control perception   intrinsic value destroyed</p>	<p>Control perception in terms of self-determination, according to the MCT: perception as decreasing self-determined behaviour; as being extrinsically controlled and focus changing from inside to outside (locus of control); it is then perceived as an over-justification for keeping intrinsic motivation (Frey &amp; Jegen, 2001, p. 594), destroying the intrinsic <b>value</b> of the task being carried out.</p>		<p>Allocation to this category if</p> <ul style="list-style-type: none"> <li>- the feeling of being expected to publish according to the list causes a decrease in self-determination perceived, destroying the intrinsic value of the task.</li> </ul>
<p><b>C3: SELF-ESTEEM</b></p>	<p>Perception of the incentive system as being supportive in terms of self-esteem, according to MCT (feeling of</p>	<p>C3.1: Support perception (self-esteem)</p>	<p>Perception of own motivation, behaviour and competence of researching being acknowledged and appreciated by the Faculty, resulting in an increase in self-esteem and thus support</p>	<p>“Es ist einfach schön, wenn man irgendeine Art von Anerkennung bekommt. Normalerweise kriegt man nicht sehr viel Anerkennung in der Wissenschaft, [...]” (Interview D, 2018, lines 54-56).</p>	<p>Allocation to this category if the system is perceived as being supportive by meeting the defined criteria for fostering self-esteem.</p>

	responsibility and competence for the own performance), (Frey & Jegen, 2001, p. 594-595)		perception (Frey & Jegen, 2001, p. 594).		
		C3.2: Control perception (self-esteem)	Perception of own motivation, behaviour and competence not being acknowledged and appreciated, resulting in a decrease in self-esteem (Frey & Jegen, 2001, p. 594-595)		Allocation to this category if no acknowledgement and appreciation for their performance is perceived.
<b>C4: FAIRNESS PERCEPTION</b>	Perception of Publication Premia Programme in relation to others; people tend to compare their income with others, determining their level of happiness (relative income, Clark & Oswald, 1995)	C4.1: Fairness perception of the premium system	If perceived as fair if others (colleagues) win the premium, while others/oneself do/does not (comparison of income level)	[ <i>Konkurrenzsituation</i> ] “Doch, natürlich, aber ich finde, das gehört doch ein bisschen dazu. Ich glaube, das ist auch eine Form intrinsischer Motivation. Das ist auch etwas, was Rankings und Publikationsprämien auch irgendwo bewirken” (Interview I, 2018, lines 238-240).	Allocation to this category if they express their perception of colleagues winning the premium as to be fair.
		C4.2: No unfairness perceptions	No fairness perceptions if others win the premium, while others/oneself does not	[ <i>Konkurrenz um Prämie unter Kollegen</i> ] “Ich empfinde das nicht so, nein” (Interview C, 2018, line 184).	Allocation if they do not mind others winning the premium.
		C4.3: Unfairness perception of the	If perceived as unfair if others (colleagues) win		Allocation to this category if they express their perception of

		premium system	the premium, while others/oneself do/does not		colleagues winning the premium as to be unfair.
<b>C5: EX- TRIN- SIC MO- TIVA- TION</b>	Externally driven motivation, e.g. to obtain a positive outcome, such as an incentive (Olafsen et al., 2015, p. 447)	C5.1: Increase in extrinsic motivation	If the premium increases extrinsic motivation for performing the task.	“Ich finde das super, zur Motivation, muss ich schon sagen, dass das für mich schon noch einmal ein Benefit ist” (Interview D, 2018, lines 53-54).	Allocation to this category if extrinsic motivation is increased; as being expected, this should account for an increase in utility of an extrinsic motive.
		C5.2: No change in extrinsic motivation	If the premium does not change the extrinsic motivation for performing the task.	“Ja, ich habe natürlich schon die Prämie gewonnen, aber die ist jetzt auch nicht so hoch, und das motiviert mich jetzt nicht zusätzlich” (Interview B, 2018, lines 82-83).	Allocation to this category if extrinsic motivation is not increased.
<b>C6: IN- TRIN- SIC MO- TIVA- TION</b>	Internally driven motivation, by the interest in the task itself (Olafsen et al., 2015, p. 447)	C6.1: Crowding-in of intrinsic motivation	If the premium increases degree of intrinsic motivation for doing the task, which can be expressed by e.g. - joy - a positive feeling (e.g. of success), or - a consequence of appreciation, acknowledgement.	“[...] und da freut man sich dann, wenn man sich das verdient hat, wobei ich auch sagen muss, dass die Freude über den Erfolg größer ist, als die Freude über das Geld” (Interview C, 2018, lines 229-230).	Allocation to this category if intrinsic motivation is increased, thereby one of the criteria is met.

		C6.2: No change in intrinsic motivation	If the premium does not change the degree of intrinsic motivation for doing the task	“Ich bin motiviert, in meinem Fachgebiet etwas zu leisten, und dazu brauche ich nicht unbedingt so eine Faculty List” (Interview B, 2018, lines 83-85).	Allocation to this category if intrinsic motivation is not perceived to be increased.
		C6.3: Crowding-out of intrinsic motivation	If the premium decreases the degree of intrinsic motivation.		Allocation to this category if intrinsic motivation is crowded out.

#### APPENDIX 4: STRUCTURING AND SUMMARIZING PROCESS

**Table 10:** Structuring process

	Case	Line	Paraphrase	Generalisation	Reduction
<b>C1.1: Utility enhancing</b>	A	138-140	I looked at the list for a subject area for which I did not know about the relevant journals.	List used for getting informed about journals of a non-usual subject area	C1.1.1: List/Journals: Information purpose about journals of non-usual subject areas
	A	299-301	The premium could be good if considering that it can be used in a relatively free way.	Possibility of free use of the premium	C1.1.2: Premium: Possibility of free and unbureaucratic use, e.g.
	A	303-306	For travel cost, for a conference where you do not present yourself. I do not know whether to use it for employees. It was said it would be possible to use it easily and unbureaucratically.	Simple and unbureaucratic use of the premium for travel cost or conferences	



	G	183-184	It is important particularly for employees without third-party funding.	Relevance for employees without third-party funding	<ul style="list-style-type: none"> <li>- for travel cost (especially for those without research budget or third-party funding)</li> <li>- for conferences without own active participation</li> </ul>
	A	309-316	There is the possibility for fixed-term employees to apply for an early pay-out as otherwise you would only get the premium if the article is in print version, [...] which can take up to a year.	Fixed-term employees can apply for an early pay-out in order not to have to wait for the publishing date (especially important as at this point in time the contract of a fixed-term researcher could already be terminated)	C1.1.3: Premium: Possibility to apply for early pay-out (before publishing date) in order to <ul style="list-style-type: none"> <li>- accelerate access,</li> <li>- ensure access if the contract will already have ended for fixed-term researchers</li> </ul>
	A	323-324	I consider it as a nice “goody”.	Premium is a nice goody/ financial support	C1.1.4: Premium: Financial aspect as a nice goody: - Financial support
	C	228-229	It is not amazingly much – that premium – but a nice goody.		
	C	101-105	It is motivating as a financial support.		

	H	198-199	If I got it, I would be happy, as being capable of spending financial means more flexibly.		- Flexibility in spending financial means
	D	73-76	If one has the choice between two then you would look at it to see if one gets the premium, but it is not so much from a financial perspective. It is nice monies, but not as much as to let a decision be influenced by it.		
	E	137-141	It is nice though, I do not want to deny it to have such a system, especially for young researchers for whom publications are relevant for the careers.	Important for young researchers in need for publications for their career	
	G	183-184	In particular, for employees that do not have third-party funding.	Relevance for researchers without third-party funding	
	H	196-197	I consider it as good if a young colleague receives it who does not have access to a research budget or funding	Good for young researchers without access to research budgets or funding	
	I	185-195	I consider it to be an important instrument, a signal, that there are differences in research quality and of course an award and acknowledgement [...]. In order to publish very well, you also have to put in much effort.	Premium system as an award and acknowledgement	
	G	198-199	If one submits to these papers, one hopefully gets a better feedback.	Receiving feedback by submitting to a journal of the FJL	C1.1.5: List/Journals: Receiving feedback by submitting to a journal of the FJL

	H	224-230	There are people who do nothing, or who work on projects that are conventional consulting projects and who also get the financial means, but which are not scientific. And, in the meanwhile, they publish in some journals and then say – “I do publish, so I would like to have as much money as the others”. I mean, the amount is ridiculous, it does not make much difference.	Premium as important signal to foster science and high-quality research, so that the system is not exploited, and the means used for different purposes than this	C1.1.6: Premium: Signalling effect of the relevance, priority and reward of high-quality research
	I	185-195	I consider it to be an important instrument, a signal, that there are differences in research quality and of course an award and acknowledgement [...]. In order to publish very well you also have to put in much effort	Premium to signal the importance of high-quality research, which requires high performance, but which is rewarded	
	H	166-168	I think it is good to reward in a specific way – that does not concern the component of the salary – but to steer the little means available into the direction where something should be written.		
	C	97-100	I consider it as something good. I also see it when regarding my colleagues that it is an incentive, and that it shows that it is highly appreciated by the Faculty, that it is something that matters, something that should be of priority.	System shows that it is appreciated and supported, and that it should have priority	
	C	104-105	On the one hand, as a financial support, and on the other hand that one sees, “ok, that is important to the Faculty, it is supported.”		

C1.2: No Util- ity	A	129	For the positions, only the publication per se counts.	For future positions, only the publication per se counts	C1.2.1: Premium: No utility for current and future positions and CV as  - the value of the publication is higher than the premium - motivation is already high due to career incentives and for getting third-party funding
	A	133-134	If I can write into my CV that I have received the 500 euros of the publication premium, or the 1000, is totally irrelevant.	No use of the premium in the CV	
	F	76-78	The motivation is given anyway, [...].	Motivation due to future career incentives is given anyway	
	F	81-84	The publication per se would help me, first, to keep my position and if I wanted to apply elsewhere, the publication is of course very important. Thus, the value of the publication is so much higher than the value of the premium.		
	H	169-172	To give it to someone like me is relatively idiotic, as the incentive to publish is given anyway. If I want to get third-party funding, or to apply elsewhere, I need to be active anyway – this is the same for young people.		
	A	141-143	The journal list is not fully comprehensible, as when considering my subject area, there are a few Q1-journals on the FJL, others are not.	List not comprehensible/ not all relevant journals contained	C1.2.2: List/Journals: No complete comprehensibility of the list as  - not all relevant journals are on the list - the categorization of the journals to the
	B	72-74	In my area, the relevant journals are not even on the FJL.		
	H	121-124	The better journals are in the better category of the FJL, but there are also some bizarre journals in the best one and some very good ones in the worse	Criticism of the journal choice that some good journals would be in the worse category and the other way around	

			category. That does not exactly fit with how I see it and maybe some others.		according two categories does not fit with own comprehensibility of the quality of the journals
	E	43-47	If I know I got it more often, cyclically, would it be a difference. Pay-outs depend on conditions, where they do not exist in other places.	Premium is not regular and is subject to conditions	C1.2.3: Premium: - not regular - subject to performance-based conditions
<b>C2.1. Support perception (self-</b>	G	171-172	The list is important to me and also consistent with my criteria.	Consistency of the list with own research criteria	C2.1.2: List/Journals: Consistency of the journals with own research criteria (e.g. with subject and topic area, international reputation of the journal)
	G	175-177	I choose according to my subject areas. There are other rankings that I look at – but our Faculty list is consistent with them. Concerning good journals, you do not need to look, you just know they are contained.		

deter- mina- tion)	I	157- 162	The FJL correlates with the usual criteria, but I do look into it anyway. Regarding specific journals I do not need to look into the FJL, because it is canonical that they are top-ranked there. However, there are journals, where it is not completely clear and if it fits considering the subject, and if I think that it is a reasonable journal, which is important to me.		
C2.2: No support per- cep- tion (self- deter- mina- tion)	A	147- 150	Because if you are versed in a field, then it depends on the ranking of the journal, but also on the focus of the journal regarding subject matter. Where do the people who should read my article look, where do they publish themselves? This is the basis for decision making regarding the journal.	Choice of the journal according to ranking, subject area, reputation among other researchers	C2.2.1: Premium not of relevance: choice of the journal according to own criteria, e.g. according to different other rankings, subject areas or reputation among other researchers
	B	61- 66	I choose the journals according to the importance in my subject area. One has its target journals that are very good, in particular, and that are highly ranked, where you know this contributes my own reputation. [...]. But in general, I do look at highly ranked journals.		
	B	76	[The premium system]: It is not important to me.	Premium of no relevance	
	B	78	To be honest, I do not really care about the premium.		
	D	55- 56	Normally one does not receive much appreciation in the science sector, but though, I would not publish according to the list, [...]		

	D	65-70	I mean, at the end, when having finished a paper, I reflect about where to submit it. Of course, I look at lists. But this is not the primary criterion for making a decision.		
	D	73-76	If one has the choice between two then you would look at it to see if one gets the premium, but it is not so much from a financial perspective. It is nice monies, but not as much as to let a decision be influenced by it.		
	F	88-91	[...], it is nice, though, to have it and the appreciation [ <i>Influencing the topic or journal choice according to the list</i> ]: not at all.		
	H	117-119	[ <i>If taking a look at the list</i> ] No. The reputation of the journal really matters to me, that simply determines how the work is perceived, but also how I am perceived as a researcher.		
<b>C2.4: Control perception   intrinsic value</b>	H	166-172	I think it is good to reward in a specific way – that does not concern the component of the salary – but to steer the little means available into the direction where something is written. It should be noted that there are limited financial means. To give it to someone like me is relatively idiotic, as the incentive to publish is given anyway. If I want to get third-party funding, or to apply elsewhere, I need to be active anyway – this is the same for young people.	To direct the little means available into a direction, where something should be written, is good, but not for someone, for whom the incentive is given anyway.	C.2.4: Maintaining of the intrinsic value of researching being doubted by the premium system, as the incentive is given anyway

<b>de- stroye d</b>					
<b>C3.1: Sup- port per- cep- tion (self- es- teem)</b>	D	54- 56	It is simply nice to get any kind of acknowledge- ment. Normally, one does not get much apprecia- tion in science.	Perception of appreciation by the system, which is not common in science	C3.1.1: Premium system as - symbolic gesture - appreciation
	F	88- 89	I mean it is nice, as a symbol, also to get the appre- ciation.	Premium system as a symbol and appreciation	
	C	234- 236	That is for sure much more meaningful, the percep- tion of success, than the little bit of money that one gets. But it is also a nice goody where to say, “this is nice that the Faculty appreciates it”.	Appreciation of effort	
	I	187- 189	Also, the appreciation if one really publishes in a top-journal – to get a reward for that.	Appreciation of the publication	
	C	151- 153	If one really succeeds and gets the work finished, this positive mood exceeds the pressure.	Positive mood about having fin- ished the paper	C3.1.2 Good publications as - sense of achievement - something sustaina- ble having been cre- ated - to enhance the own ambition to make good research
	C	157- 159	Because the publications are somehow sustainable, one has really created something for the CV, which cannot be taken away any more, and that is simply a sense of achievement.	Publications are sustainable for the CV, a sense of achievement	
	I	218- 224	Of course, it is a pressure, but I put it on myself with pleasure. If I stop doing it, if I lose this ambi- tion, I am not at the right spot anymore, because then I cannot make good research any more, I would be lacking the ambition to publish well.	Good publications for support- ing the ambition to make good research	



	G	194-198	Because one gets challenged. Because one needs to present the research results in a specific format, that surely influences the manner of working. One believes that hopefully the expert's reports that one gets from good journals contribute to directing the work into a better direction.	Challenge of presenting the research results in a specific format; expert's reports can contribute to directing work into a better direction	- a challenge of presentation in order to get good feedback
	I	111-116	For me, the intrinsic motivation is derived from still being curious, interested and willing to open up and work on new topics. To get the visibility and acceptance from international colleagues that one only gets when doing good and visible research. Then one gets invited to conferences and talks. This acceptance drives many scientists.	Intrinsic motivation from the interest in new topics and to make the research visible in order to be accepted by international colleagues and to get invited to conferences and talks.	C3.1.2: Acceptancy from international colleagues, to get invited to conferences and talks
	G	219-220	The premium helps to create an incentive to submit the paper.		C2.1.3: Premium: Support and incentive for submitting a paper
<b>C4.1: Fairness perception</b>	C	184	<i>[competition for the premium among colleagues]</i> I do not perceive it like this.		C4.1.1: No competition for the premium among colleagues
<b>C4.2: No</b>	G	212-214	I suppose that my colleagues get the research premium, but I have not talked to anyone in my immediate environment about it. I do not know.	No talking about the premium in immediate environment	4.2.1: No perception regarding surrounding as no

un-fair-ness percep-tions					talking about the pre-mium
	H	196-197	If a young colleague gets the premium, who does not have an own research budget and not access to third-party funding, I am fine with it.	Positive perception of the pre-mium system if a young re-searcher without own research budget gets the premium	C4.2.2: Premium perceived as good for young re-searchers without own research budget
	I	238-240	[competition situation] I consider it as part of it. I believe that is a specific form of intrinsic motiva-tion. It is something that is caused by publication premium systems.	Competition situation part of such a system	C4.2.3: Competition is part of such a premium sys-tem
C5.1: In-creas e in ex-trin-sic moti-va-tion	A	323-324	I consider it as a nice goody, but do not really know if it changes anything.	Premium as a nice goody	C5.1.1: Slightly enhancing motivation as - the premium being perceived as “nice” - the list being looked at when deciding be-tween two journals - financial means can be spent more flexi-bly
	D	73-76	If one has the choice between two then you would look at it to see if one gets the premium, but it is not so much from a financial perspective. It is nice monies, but not as much as to let a decision be in-fluenced by it.	When choosing between two journals, one looks at the list; the premium enables to spend means more flexibly	
	E	132-135	Of course, it is an incentive, but I do not perceive it as something special. It motivates more, but not in-credibly.		
	H	198-199	If I got it I would be happy as being capable of spending financial means more flexible.		
	D	50-53	To be honest, I was surprised to get the premium. It seems that the faculty list is a nice one. It was an	Faculty list contains nice jour-nals	5.1.2:

			“ok”-journal, but it was not a top-journal, and I received it anyway – that was nice.		Increase in motivation; premium and list perceived as - nice - a benefit - an important instrument.
	D	53-54	I really have to say that I consider it to be motivating – it is a benefit for me.	Premium as motivation, signal and benefit	
	G	177-180	If I were unsure than I would, before submitting a paper, look at the faculty list, because the premium is important to me.		
	I	185-187	I consider it to be an important instrument, a signal, that there are differences in research quality and of course an award and acknowledgement [...]. In order to publish very well you also have to put much effort into it.		
	C	101-105	For myself, it motivates of course to say, “ok, if I invest a little bit more into the paper, I would be capable of submitting it to a better journal and maybe it works out”, which is motivating. First, as financial support and second, to see that it is important to the Faculty, that it is supported.	Motivation to put a little more effort into the paper in order to get an even better publication.	
<b>C5.2: No change in extrinsic</b>	B	82-83	Yes, I have already won the premium, but it is not that high, and it does not motivate me additionally.	Motivation given anyway through career incentives	C5.2. No additional increase in motivation as - motivation is given anyway - publication is of so much more value than the premium
	F	73-74	It is nice, though, to have it, but I do not think I would work harder because of the premium.		
	F	76-78	All journals that I would choose are on the list – I mean, the motivation is given anyway, [...].		
	F	81-84	The publication itself would help me to keep my position, as well as when applying elsewhere, then,		

moti- va- tion			the publication is extremely important. Thus, the value of the publication is so much more important than the premium.		
C6.1: Crowding-in of intrinsic motivation	C	234-236	That is for sure much more meaningful, the perception of success, than the little bit of money, that one gets. But it is also a nice goody where to say, “this is nice additionally, that the Faculty appreciates it”.	Joy about the sense of achievement much bigger than about the money	C6.1: Joy about - the sense of achievement - appreciation - challenge
	C	229-232	It makes happy to have earned it, whereby I need to say that the joy about the success is bigger than about the money. It is simply the feeling of getting something positively examined and to have success.		
	D	54-56	It is simply nice to get any kind of acknowledgment. Normally, one does not get much appreciation in science.		
	F	72-73	I mean, it is nice, [...], as a symbol, and to get the appreciation.		
	I	187-189	I consider it as an appreciation when having published in a top-journal, that one gets a reward for that.		
	G	194-198	Because one gets challenged. Because one needs to present the research results in a specific format, that surely influences the manner of working. One believes that hopefully the expert’s reports that one gets from good journals contribute to directing the work into a better direction.	Challenge of presenting the research results in a specific format	

	G	171-172	The list is important to me and complies with my criteria.	Consistency of the list with own research criteria	C6.1.2: List is important and complies with own research criteria
<b>C6.2: No change in intrinsic motivation</b>	A	147-150	Because if you are versed in a field, then it depends on the ranking of the journal, but also on the focus of the journal regarding subject matter. Where do the people who should read my article look, where do they publish themselves? This is the basis for decision-making of the journal.	Choice of the journal according to ranking, subject area, reputation among other researchers	C6.2.1: List not important as - publishing according to own criteria - as doing research according to own subject area
	B	83-85	I am motivated to contribute something in my research area, and for that I do not necessarily need a faculty list.	Motivation to contribute something within the own research area	
	D	75-76	It is nice money, but not as much as to let a decision be influenced by it.	No influence of the decision where to publish	C6.2.2: No influence of the decision by the premium
	F	72-74	I mean it is nice, as a symbol, also to get the appreciation. It is nice, though, to have it, but I do not think I would work harder because of the premium.	No incentive to work harder because of the premium system	C6.2.3: No incentive to work harder because of the premium system
	E	129	Yes, but I would not consider it as something special.		
<b>C6.3: Crowding-out of</b>	H	169-172	To give it to someone like me is relatively idiotic as the incentive to publish is given anyway. If I want to apply for third-party funding or apply		C6.2.4: Premium not necessary as incentive to

<b>in- trin- sic moti- va- tion</b>			somewhere, I have to be active anyway – that is the same for young people.		publish is given any- way
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