Historical and pluralist perspectives on motivation crowding theory

Master's thesis in Economics

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Abstract

The decreasing or increasing effect of extrinsic incentives on intrinsic motivation is called motivation crowding. In this thesis a conceptual history of the motivation crowding effect is presented. The contributions to motivation crowding theory of multiple disciplines are combined to show the development of the concept. To get a good understanding of the development, it is presented in the context of the broader development of incentive theory and economics in general. The thesis shows that motivation crowding theory contributes in two ways to incentive theory. Firstly, it providing insights in the conditions under which extrinsic incentives crowd out intrinsic motivation. Secondly, it shows that the underlying assumptions of mainstream economic incentive theory might not be that solid.

Content

Chapter 1 Introduction

1.1 A first look at incentives and the motivation crowding effect

In organizations, it is important for managers that their employees put in effort to reach the goals of the organization set by management. Principal-agent theory assumes that this is problematic, because interests of managers and employees do not align (Linder & Foss, 2015, p. 344). There can be all kinds of circumstances which make that employees are not able or not willing to act in the best interest of the company (Merchant & Van der Stede, 2017, p. 11-14). Therefore, managers look for ways to match the interests of their employees with the goals they want to reach with the organization. Nowadays, incentives are a widely used mechanism for aligning interests within an organization. Grant (2002, p. 133-136) defines incentives as *'external prompts to which the individual responds'.* According to her, incentives have the following characteristics:

1. Incentives are used in some form of negotiation. This means that an extrinsic offer is done which is 'extra'. An incentive is thus not a motivation coming from inside the employee himself (intrinsic motivation), but it is a motivation coming from outside the employee;
2. they are often used in a principal-agent relationship;
3. they are used to provoke a certain response;
4. they are meant to alter the choice a person was going to make, by motivating him to choose differently. The incentive is the motivation without which the person would have chosen the non-desired way.

A well-known example of employee incentives are bonuses that are given to employees when they reach their targets (see for example Risher, 2020). But employees can also be incentivized in non-financial ways, for example by letting them help in determining the business strategy, so that they feel more involved.

Incentives are not only used in employer-employee contexts, but also in all kinds of other situations. For example, giving managers a bonus when the company is performing well is an incentive to align their interests to the interests of the other shareholders (Nyberg, Fulmer, Gerhart & Carpenter, 2017). Furthermore, customers can be incentivized to buy certain (for example environmental-friendly) products by lowering the tax rates on these products. In this thesis, I will focus on incentives in organizations to align the interests of the employees with

the interests of the organization and its managers. However, for the purpose of my thesis I will also discuss literature on other types of incentives when necessary.

Incentives are an important topic in the economic literature. Some of the authors conclude that incentives often do not work that well (Kohn, 1993). Multiple reasons are mentioned in the literature for this failure of incentives. One of these reasons is that incentives can be counterproductive. This is called the *motivation crowding out* effect. The economic incentives may not work, because they influence people's intrinsic motivation (already existing social preferences) in a negative way. Conversely, economic incentives might also influence intrinsic motivation in a positive way. This is called the *crowding in* effect.

The motivation crowding effect was invented (however not mentioned specifically in these terms) 50 years ago by the sociologist Titmuss (1970). In his famous book, Titmuss critized the market for blood donations. One of his arguments was that, by paying people for donating blood, some people would lose their altruistic motivation to donate blood. In the 50 years after the publication of this book, this argument has been developed into a complex theory with multiple underlying processes and all kinds of conditions under which the effect exists. This development will be studied in this thesis.

The theory of motivation crowding challenges the core assumption of mainstream economics that people respond rationally to incentives. Hence, the concept was mainly developed outside of mainstream economics. Economic disciplines such as game theory, institutional economics, behavioral economics, experimental economics, happiness economics and ethics all provided new insights for the understanding of incentives and motivation crowding theory. To give a first idea of these contributions, both behavioral as well as game theoretic experiments have provided evidence of the existence of the motivation crowding effect (Festré & Garrouste, 2014). Furthermore, intrinsic motivation can be seen as a way to serve one's well-being (Weibel, Wiemann & Osterloh, 2014, p. 6). Therefore, it might be a relevant for the discipline of happiness economics to study the conditions under which extrinsic incentives crowd out people's well-being. Finally, institutional economics can contribute to motivation crowding theory by studying the institutional context under which intrinsic motivation is more likely to be crowded out by extrinsic incentives.

These different economic disciplines provide an interesting point of view. Therefore, in this thesis I want to give an overview of the history of the motivation crowding theory, looking from a pluralistic perspective. This brings me to the problem statement of this thesis: to study the

development of the concept of motivation crowding and the contributions that different economic disciplines have made to this development.

The history of the motivation crowding concept will be studied by using two methodological approaches: firstly, the conceptual history approach and secondly, the interdisciplinarity approach. I will elaborate on these approaches in chapter 2. The time frame for my study will be the last 50 years (from the entrance of the motivation crowding theory in the literature in 1970 until today).

1.2 Contribution

Incentives are everywhere in economics (Prendergast, 1999). Economics is often defined as the 'discipline of incentives' (see for example American Economic Association, 2020 and Myerson, 1999). Because motivation crowding theory challenges such a fundamental assumption in economics, it is an important concept. To better understand the origins, development and the current state of motivation crowding theory, it is important to be aware of the history of the theory. To my knowledge, there is no history written yet on this specific topic. There are multiple studies that consider the history of employee incentives. For example, Grant (2002) considers the origins of incentives, with a focus on what incentives actually are, to be able to draw conclusions on the ethics of incentives. Furthermore, Dix (2014) provides a thorough investigation of the 'genealogy of incentives'. On the specific topic of motivation crowding there are however only some short overviews of the development of this effect in the past as a way of introducing the theory (see for example Bowles & Polania-Reyes, 2012 and Frey & Jegen, 2000).

The contributions of my thesis to the literature on incentives can be expressed in a fivefold research goal. The first goal is to make visible how the theory developed in the academic literature and what roles the disciplines mentioned before played in this development. This development will be viewed against the background of the broader development of incentive theory and the economics discipline as a whole. The second goal of my thesis is to show how the application of incentives and motivation crowding theory in practice changed over time due to the developments in the literature. My third goal is to show how the different disciplines interact by comparing and contrasting them. The fourth goal of the thesis is to show what the contributions of motivation crowding theory are to the mainstream incentive theory. Finally, the fifth research goal of this thesis is to do some recommendations for further research on the motivation crowding effect.

Compared to other contributions on the history of incentives my thesis will differ in at least three ways. Firstly, my thesis will be focused on the motivation crowding effect and will be more elaborate than the short introductory histories on this topic which I discussed above. Secondly, the underlying methodology of my thesis is a conceptual history. A conceptual history has, to my knowledge, not been written before on the motivation crowding theory. Finally, I use a pluralism of perspectives to show the development of the theory in the academic literature. I have not found a history on motivation crowding theory or incentive theory yet that uses this interdisciplinary way of looking at the development of the theory.

1.3 Structure

The rest of this thesis is structured as follows. In chapter 2, I will elaborate on the methodological approaches used in this paper. In chapter 3, I will review the current state of thinking about incentives in mainstream economic theory. Moving on in this chapter, I will introduce the concept of motivation crowding. I do not want to discuss this theory too extensive in the first chapter, because I believe the main purpose of my thesis is to clarify the (development of) the theory in detail through its history. Chapter 4 will be the main chapter of my thesis, in which I go through the history of the motivation crowding theory on the basis of contributions of multiple economic disciplines (research goal 1). Furthermore, this chapter addresses the development of the way in which motivation crowding theory is visible in practice (research goal 2). In chapter 5 I will compare, contrast and combine the contributions of the disciplines I discussed earlier to shortly sketch the development of motivation crowding theory from a bird's eye view (research goal 3). After I did this, I will be able to outline the way in which motivation crowding theory contributed to the mainstream incentive theory and to the use of incentives in organizations (research goal 4). Chapter 5 will end with some recommendations for future research (research goal 5).

Chapter 2 Methodology

2.1 Introduction

In this thesis, I address the five research goals as stated in the introduction by writing a conceptual history of the concept of motivation crowding theory from a pluralistic perspective. For this purpose, I studied literature contributing to this concept by using two methodological approaches: the conceptual history approach and the interdisciplinary approach. These two approaches will be elaborated on in this chapter. The last section of this chapter explains in detail how these approaches will be used in practice in this thesis.

2.2 A conceptual history

In this thesis, the conceptual history approach is used to study the development of the motivation crowding effect. A conceptual history tries to discover the development of the meaning of the class of words that form a concept (in this case *motivation crowding*), to the concept as how it is understood today (Goering, 2013, p. 427). Language is important in a conceptual history, because it is impossible to know something when it is not put into words. Therefore, concepts are at the centre of knowledge about the past (Goering, 2013, p. 428-429). As Klaes & Sent wrote, there are two types of conceptual histories: the idealist conceptual history and the institutional conceptual history (Klaes & Sent, 2005 p. 27-29). The idealist conceptual history is an intellectual history. Authors who write an intellectual history trace the underlying development of the content of a concept, independently of the words used to express this concept. An institutional history traces the words that are used for a concept, rather than its content. This methodology is called institutional, because the linguistic construct that is used is determined by the institutions in this 'specific linguistic community' (Koselleck, 1972). Also, an institutional history emphasizes the importance of social-political constructs and underlying institutional structures in shaping the development of a concept such as motivation crowding (Steinmo, 2008).

In this thesis, I use the institutional conceptual history method. This method is suitable for a history about motivation crowding theory, because the concept that is indicated by these words is unambiguous. It is clear what is meant by the words *motivation crowding*. By using the institutional conceptual history method, I take as given the concept of motivation crowding theory as a class of words. Because it is so clear what is meant with 'motivation crowding', it will not be hard to track the development of the concept by using these words as search terms.

2.3 Interdisciplinarity

In this thesis, the concept of motivation crowding will be looked at from an interdisciplinary perspective. This means that I will consider contributions to the theory from multiple disciplines. Actually, my thesis practices interdisciplinarity in three ways. Firstly, writing a history on an economic concept is already an integration of the two disciplines of economics and history. Secondly, my thesis combines different economic disciplines, such as behavioral economics and institutional economics. Thirdly, most of the disciplines I will discuss are interdisciplinary themselves. In fact, besides the neoclassical discipline, all the other disciplines in this thesis can be seen as subfields from the interdisciplinary fields of economics and psychology and economics and sociology. Behavioral economics is a subfield from the interdisciplinary field of economics and psychology (Camerer, 1999). Institutional economics can be seen as a subfield of the interdisciplinary field of economics and sociology (see for example Reisman, 2007). Happiness economics combines economics with both psychology and sociology (see for example Frey & Stutzer, 2002). Finally, ethics often applies a sociological or psychological view on economics. In the following section, I will first make some general comments on interdisciplinarity. Afterwards, I will give a short introduction to the interdisciplinary fields of economics and sociology and economics and psychology.

2.3.1 Some general comments on interdisciplinarity

To start with, it is important to define interdisciplinarity. I agree with Mäki & MacLeod (2016, p. 325) that interdisciplinarity is not necessarily about integration: a good interdisciplinary study does not have to integrate different disciplines. Interdisciplinarity already exists when there is some relationship between multiple disciplines (Mäki, 2016, p. 331). Therefore, interdisciplinarity also means just studying a concept from different perspectives. The latter is what I do in chapter 4 of my thesis. Besides using the contributions of different disciplines, the contributions of the disciplines to motivation crowding theory will also be compared and contrasted.

Next, I should discuss why interdisciplinarity is relevant (in general and for my thesis). Barry, Born & Weszkalnys (2008) argue that there are at least three reasons for interdisciplinarity: accountability, innovation and ontology. I believe that for this thesis ontology and accountability are the most important drives to use an interdisciplinary approach. The ontological reason can be explained as changes in (the way of thinking about) the reality of a concept due to the interdisciplinary approach (Barry, Born & Weszkalnys, 2008, p. 25). In my

thesis this means that I intend to change the way of thinking about the motivation crowding concept, because I want to show that it has been influenced by different disciplines in the past.

Accountability can be explained as giving practical relevance to academic research (Mäki, 2016, p. 333). Interdisciplinarity combines different scientific disciplines, because most issues in the real world do not play within just one discipline. Therefore, these issues can be best resolved by addressing them from an interdisciplinary perspective (Mäki, 2016, p. 333). For this reason, interdisciplinarity makes economic research practically and socially relevant (MacLeod, Merz, Mäki & Nagatsu, 2019, p. 545). After all, strict (neoclassical) economic models are often too rigid and do not reflect the real world well (Sent, 2004). The rationality assumption is the basis of many useful economic models. These models are often not able to reflect what is really going on, because they leave out the social and psychological truth that people are not rational at all. As we will see in the next chapters, motivation crowding is an example of a concept that challenges a neoclassical concept (the working of incentives) and the rationality assumption. The concept has been developed in multiple (interdisciplinary) fields. Therefore, it is important to consider all these disciplines in researching the history of this concept. I think this makes my thesis and the lessons drawn from it more complete and more accountable.

Now that I have established that interdisciplinarity is important, I should acknowledge that it is at the same time a challenging research method (MacLeod, Merz, Mäki & Nagatsu, 2019, p. 546). To be able to understand the interactions of different disciplines, for example economics and psychology, a systematic approach is important (MacLeod, Merz, Mäki & Nagatsu, 2019, p. 546). Therefore, I will perform my research in a structured way, as will be explained in section 3 of this chapter. Other challenges in interdisciplinarity that are mentioned in the literature are institutional and methodological challenges. An example of an institutional challenge is communication between different disciplines, because they both have their own jargon (MacLeod, 2018, p. 698). A methodological challenge can be for example that researchers from one discipline do not understand a method or model that is specific for the other discipline (MacLeod, 2018, p. 707-709). However, these challenges do not apply to this thesis. The reason for this is that the only thing I actually do is bringing together theories that are already interdisciplinary. As mentioned before, in behavioral economics for example, economics and psychology are already integrated. This goes for all the disciplines considered in my thesis, except for neoclassical economics. I only study the historical development of a concept in these different interdisciplinary fields, whereby I use the same methodology for

every discipline. Finally I will integrate these disciplines, but also in this case the institutional and methodological challenges do not play a role. There are some other challenges I see in doing this type of interdisciplinary research. For example, it might be hard sometimes to establish to which discipline a paper belongs. How I will solve these problems will be explained in section 3 of this chapter.

2.3.2 Economics and sociology

Since the beginning of the twentieth century, economics and sociology have been combining their forces in many ways (Swedberg, 2003, p. 1). The relevance of sociology has grown over the century and is still growing in contemporary economics (Zafirovski, 2016). The interdisciplinary field of economics and sociology is called economic sociology or socioeconomics (Zafirovski, 2016). Since economics is a social science, it is obvious that it needs sociology to be practically relevant. Economic models are useful to study economic theory, but to make sense in the real world, social factors should be included in these models and theories. There is a lot to tell about economic sociology, but for my research just a short introduction to the field will be sufficient, so I will limit myself to this.

Weber, Comte, Marshall, Pareto and Durkheim are often considered to be the founders of economic sociology (Zafirovski, 2016). Other important people in this field are for example Schumpeter, Keynes, Veblen and Akerlof. Economic sociology deals with all sociological factors that influence the economy. By doing this, it brings new dimensions into economics, for example ethical and cultural dimensions. Without trying to give a comprehensive overview, I will discuss some examples of the major topics in economic sociology.[1] First of all, economic sociology provides new insights to the economic market theory. Where pure neoclassical economics proposes the idea of an efficient market, economic sociology opposes this idea, by arguing that there are many social factors influencing the market (Zafirovski, 2016, p. 66). Examples of these factors are culture, social status, social networks and furthermore ethical, political and institutional influences. Another major issue in contemporary economic sociology is the socially-embedded individual. Where pure neoclassical economics examines the preferences of the individual and states that the individual will make rational choices on the basis of these preferences, economic sociology criticizes this idea in a few ways. Firstly, it notes that an individual's preferences are not given, but that they are socially embedded, just like the

[1] For an extensive overview of issues in contemporary economic sociology see Davis & Dolfsma, 2008.

individuals themselves. Furthermore, it adds that an individual's preferences can be in conflict with each other (Davis & Dolfsma, 2008, p. 77-78).

Other major topics in economic sociology are well-being and institutions. These topics are the most important to my thesis and will therefore be shortly introduced in this section as subfields (happiness economics and institutional economics) of economic sociology. Institutional economics stresses the importance of all kinds of formal institutions (like rules and laws) and informal institutions (like behavioral norms) (Williamson, 2000). Institutional economics has a focus on the context of a situation. For the subject of my thesis, this means that the context influences the way in which extrinsic incentives affect intrinsic motivation and that it is important which extrinsic incentives are used. Organizations and individuals are influenced by the institutions in a certain context. New institutional economics is a version of institutional economics that adds instiutions to neoclassical economics, which makes it a more mainstream discipline (Williamson, 2000, p. 595-596).

Happiness economics stresses that happiness should be the ultimate goal in economics instead of money, because people's well-being is very relevant. Money makes people happy on the short term, but on the long term other factors are more important for people's happiness (Reyes-García et al., 2016, p. 2-3). Therefore, happiness economists do not express welfare in income or GDP, but instead in terms of well-being (Van Praag & Ferrer-i-Carbonell, p. 3-8). This well-being is influenced by all kinds of economic factors, like unemployment, inflation but also factors like marriage. Thus, happiness economics argues that it is important to look at what makes people happy and what does not make them happy (Frey & Stutzer, 2002, p. 171). Since people's intrinsic motivation influences and is influenced by their happiness, happiness economics may also play a role in motivation crowding theory. Furthermore, motivation crowding out theory also has some ethical aspects related to people's well-being.

2.3.3 Economics and psychology

The ideas of economics and psychology are combined in the interdisciplinary field of economic psychology. This field has two main research interests (Lea, 2015). Firstly, economic psychology studies the underlying psychological background behind economic behavior. This field of research is called behavioral economics. Secondly, economic psychology studies the influence of economics on psychological processes. Some examples of topics in both research areas will be provided later in this paragraph. The combination of economics and psychology is useful for the economics discipline, because psychology provides new insights to economic

models. These insights can in turn be useful for economic policy and, as a matter of fact, are nowadays often used in public policy making (Harford, 2014). The contribution of psychology to economics is important, as can be illustrated by the growing attention for behavioral economics in the past (see for example Sent, 2004).

Two major names in contemporary economic psychology are Kahneman & Trversky (Sent, 2004, p. 743). Other important writers in this field are for example Camerer, Rabin and Akerlof (in contemporary behavioral economics) and Simon & Loewenstein (in an older version of behavioral economics) (Sent, 2004, p. 737). Just like in economic sociology, there is also a lot of literature in the field of economic psychology. In this section, I can again just give a short introduction to the field.[2]

Behavioral economics is mainly about decision-making by individuals. Behavioral economists study the psychological factors behind the decisions that people make. Their method is as follows: firstly, they provide evidence that individual behavior is in a certain way not as predicted by the economic model. Next, they propose a behavioral theory that shows how this deviation from the economic model can be explained (Sent, 2004, p. 748). They often use experiments as their research method (Sent, 2004, p. 748). An example of a main finding by behavioral economics is that of bounded self-interest (Mullainathan & Thaler, 2015). People are not completely self-interested, as was argued by neoclassical economics. Instead, they are often willing to put other people's interest before their own.

As mentioned before, another subfield in economic psychology studies the impact of economics on psychological processes. For example, it was found that high economic development can have negative effects which are caused by a lot of stress (Holmes & Rahe, 1967). This is an example of research that studies the effects of the economy on human well-being. Happiness economics, discussed before as a subfield of economic sociology, can therefore also be seen as a subfield of economic psychology. Another example of research in this field is the influence of incentives on people's actual behavior, which is the specific topic of this thesis.

2.4 How the approaches will be applied in my thesis

Combining the conceptual history and interdisciplinarity approaches, I will now explain what using these approaches means in practice. For my research, I use the JSTOR database, because

[2] For an extensive overview of issues in contemporary economic psychology see for example Altman, 2016 and ScienceDirect, 2020.

this database contains all articles from more than 2.000 journals in all kinds of disciplines (https://www.about.jstor.org). Therefore it is a large database that covers the main articles in the field. Furthermore, the database generally is representative of the historical developments of concepts (Klaes & Sent, 2005, p. 30).

In JSTOR, I used 'motivation crowding' as my search term. Other terms are also used for the same or comparable ideas – *cognitive evaluation theory*, *the overjustification effect*, the *hidden costs of rewards* – however, considering the size of the master's thesis, I decided to focus my research on tracing the development of the linguistic construct of the more economic term 'motivation crowding'. Because I also used the insights of some influential overview papers (Deci, Koestner & Ryan, 1999; Gneezy, Meier & Rey-Biel, 2011; Bowles & Polania-Reyes, 2012), that cover a large part of the literature on motivation crowding and all the related concepts named above, my literature collection is still representative.

I selected the following subjects to search in: business, economics, finance, general science, labor & employment relations, management & organizational behavior, psychology, political science, public policy & administration and sociology. Furthermore, I narrowed my search down to the years 1970-2020, because – as discussed before – this is the time frame for my study. This selection yields 2.858 search results. I did not only use the results that came up, but I also sometimes used references that were mentioned in the search results. It was impossible for me to use all these results in my thesis. Therefore, I only used the literature from which I think it is important to sketch the development of the motivation crowding theory.

From the literature found and selected using this method, I first established to which discipline they belong. The economic disciplines I distinguished are behavioral economics, institutional economics, neoclassical incentive theory combined with game theory, happiness economics and ethical economics. The first method I used to establish to which discipline the literature belongs is to look at the content of the study itself. In many cases, it was then clear already to which discipline the paper belongs. An alternative method to find out to which discipline literature belongs is to look up the authors' research background. Also, the journal in which the article was published often provides information about the discipline. Some of the literature fit into multiple disciplines. In these cases I decided into which discipline it fit best considering the context of the rest of the literature or I simply placed the paper in both categories.

After I finished dividing the literature into different disciplines, I studied the literature found for each discipline to see what this discipline contributed to the theory of motivation crowding.

The next step was to determine what the most important findings are and to summarize the contributions of these disciplines. These contributions were then assembled and compared to other contributions, so that I could draw connections between them. Finally, I was able to provide a structured historical overview of the contributions of all these economic disciplines.

The difficulty in using the method of dividing the literature in different disciplines was to still see the bigger picture. Therefore, I also transcend the different disciplines. In the final chapter I compare, contrast and combine their contributions to sketch the development of the concept from a bird's-eye view and to draw some lessons and paths for future research from this history.

Chapter 3 The development of the mainstream theories on incentives and an introduction to motivation crowding

3.1 Introduction

This chapter will explain the (development of) the 'state of the art' incentive theory from a bird's eye view and give a short introduction to the motivation crowding effect. Discussing the mainstream incentive theories is useful, because it provides the reader of the thesis with a general understanding of these theories, which is necessary to understand the concept of motivation crowding and why it is a crucial concept in incentive theory. Also, having a broad view on the development of the mainstream economic incentive theory is useful for the understanding of the development of the motivation crowding concept. Furthermore, to be able to draw lessons from the development of the motivation crowding theory for contemporary incentive theories we should have an idea of these contemporary incentive theories.

Since incentive theory is so fundamental in economics, there is a vast amount of literature and theories on incentives. Therefore it will not be possible to discuss all the theories on incentives in this chapter. I will limit myself to the basics and address some important topics in this field that are relevant for my discussion in the next chapters. The focus will be on neoclassical incentive theory. Although there are other incentive theories, agency theory is the most important one (Yang, 1991). Furthermore, incentive theory highly rests on game theory, which has become an important of neoclassical economics.

The chapter will start by explaining why we actually need incentives (section 3.2). Then, I will discuss how incentives work (section 3.3). In both of these sections, some of the most important theories on incentives will be highlighted. Next, I will discuss some criticisms on incentive theory and some reasons why incentives do not always work (section 3.4). The motivation crowding theory is one of these reasons and will be introduced in section 3.5. Motivation crowding theory will only be introduced shortly, because it is the goal of the next chapter to discuss the (development of) the theory in detail through its history. In this chapter, only the basic ideas behind the theory will be discussed, so that the reader has a broad idea of the theory when it will be discussed in the next chapter.

3.2 Why do managers use incentives?

Agency theory states that the goals of the principal (the employer) and the agent (the employee) are conflicting. That is because the employer wants the employee to act in the best interest of the company, mainly by putting in maximum effort, while it is not in the employee's best interest to put in a lot of effort. Both the principal and the agent are self-interested, so they will both try to maximize their utility (Yang, 1991). Based on this, the agent makes decisions as to how much effort he puts into his work. These basic ideas underlying agency theory came up in the last part of the 19th century, in the time of the industrialization (Dix, 2014). During the 20th century, the knowledge on incentives broadened and deepened and many different incentive theories were developed.

In an employer-employee relationship, an (employment) contract is constructed. Contract theory, which came up in economics in the second half of the 20th century (see for example Arrow, 1971 and Holmström, 1979), deals with conflicting interests of principal and agent. Therefore, contract theory can be seen as the underlying basis of agency theory.[3] The principal has to design these contracts carefully. He has to trade off two concerns: the principal wants to give incentives to employees to put in effort, but this leads to risk sharing by the agent, who will then require a higher wage for this risk (Milde, 1987). The problem of risk sharing comes up when the principal pays the agent for his performance based on his output. However, the output does not only depend on the agent's effort, but also on risk coming from outside. When the agent is paid for the output, the risk is partly transferred to the agent. The agent is supposed to be risk averse, because he is less able to diversify than the principal is (Eisenhardt, 1989, p. 60-61).Therefore, the agent will require a compensation for bearing this risk (Eisenhardt, 1989 and Homström & Milgrom, 1991).

In constructing employment contracts, several problems can arise. The two most fundamental contracting problems are *moral hazard* and *adverse selection*. They both have to do with decision-making by the agent. Moral hazard is the problem that the employee does not bear the risk for him putting in less than maximum effort. The source of this problem is incomplete information (Yang, 1991, p. 283-284). The employer cannot monitor the employee's effort, but

[3] Although most incentives in employer-employee relationships are provided in the employment contract, it is important to note that incentives do not necessarily have to be based on contracts. For example, career concerns (which are not incentives provided in a contract) can also be important incentives for employees (Gibbons, 2005, p. 8-10).

only his output (Yang, 1991, p. 284). After all, the employer does not have complete information on what the employee is doing and on how much effort he is putting into his work. The employee does not tend to reveal this information to his employer. Hence, the employer cannot contractually enforce that the employee puts in 'maximum' effort (Ronen & Balachandran, 1995). Therefore, the employee has no reason to put in maximum effort. As a consequence, the employer must find a way to make sure the employee does put in maximum effort. He does this by motivating the employee to act in the company's best interest. The employer provides incentives to the employee, which maximize the employee's utility if he acts in the way the employer wants. Hereby, the interests of the principal and the agent are aligned.

While moral hazard arises during the employment relationship, adverse selection is the problem that comes up before signing the employment contract (Yang, 1991, p. 287). At this moment, the future employee has again more information about, for example, his productivity, than the employer. As a consequence, future employees tend to self-select in a way that is unfavourable for the employers (Greenwald, 1986). Therefore, the employer has to design a job contract that incentivizes the employee to work hard and to be 'honest' about his capabilities (Yang, 1991, p. 287). To be able to get the information about the employee's capabilities, the employer must give an incentive to the employee which is called the *information rent* (Norman & Chisholm, 2014).

Concepts as risk sharing, moral hazard and adverse selection have all been developed in contract theory, which advanced the understanding of incentive theory. They were mostly abstract mathematical concepts that rested on strict assumptions and were meant to provide a better theoretical understanding of agency theory (Dix, 2014).

3.3 How do managers use incentives?

Managers use incentives to motivate employees in several ways. A lot has been written and many models have been constructed on how to design the best incentive systems. This literature is situated in the field of mechanism design theory. Mechanism design theory came up in the 1970s, around the time game theory had become popular in economics, and that is no coincidence: mechanism design theorists are using the game theoretical constructs to develop mathematical models as to how incentives should be designed (Dix, 2014, p. 113-118). In 2007, Hurwicz, Maskin and Myerson won the Nobel Prize in economics for their contributions to mechanism design theory (Royal Swedish Academy of Sciences, 2007).

Considering the problem of asymmetric information and the fact that agents could use this to their advantage, mechanism design theorists look for *incentive compatibility*. An incentive compatible mechanism is a mechanism *"for which participants in the process would not find it advantageous to violate the rules of the process"* (Ledyard, 1989, p. 141). An example of violating 'the rules of the process' is free-riding (Ledyard, 1989, p. 142). When an arrangement is incentive compatible, it provides the best possible result for the principal (Milde, 1987, p. 41). In this situation, the employee will be honest to the employer about its private information. Incentive compatibility is a game theoretic concept, which means that the incentive compatible result is the equilibrium outcome: there is no better option in this situation. The agents and principals as players of the game will make decisions (for example on how much effort to put in the work) whereby they maximize their utility. The decisions the agents make are based on their preferences, which can be influenced by the incentives the employer gives.

Game theory is used in incentive theory to study the 'rules of the game': which decisions do players make and, based on that, what is the incentive compatible outcome? (Trost & Heim, 2018, p. 7).[4] The game can result in different kinds of equilibria, of which the most important in this field are Nash equilibria (the player's strategy is optimal under the condition that the other players play the equilibrium strategy as well) or equilibria in dominant strategies (the player's strategy is optimal no matter what the other players do) (Trost & Heim, 2018, p. 7).

In the literature on incentives, many models for incentive compatibility in different situations have been developed. In the following, I will start to explain the 'standard' static principal-agent model, with one principal and one agent. Afterwards, some other models that extend the standard model will be addressed. For this thesis it is only necessary to discuss the models that have a link with the discussion in the next chapters. For example, some of the models explained in this chapter will be altered once the motivation crowding theory is taken into account. There are many other principal-agent models and extensions to the models, that will not be discussed in this chapter.[5] In my discussion of the different models, I will refer to the employer with principal and to the employee with agent.

[4] For a more extensive discussion of how incentive compatibility as a game theoretic concept works, see Trost & Heim, 2018.

[5] For a more complete overview of different models see for example Prendergast, 1999.

3.3.1 The standard static principal-agent model

In the standard model, the principal designs a (formal) contract which provides a financial reward to the agent when he reveals private information about his effort (Gibbons & Roberts, 2012). This model is a onetime game (Prendergast, 1999, p. 12). The reward the principal offers is dependent on the signals (as determined in the contract) that the agent gives about his effort. These signals are noisy because of two reasons. Firstly, they almost never express perfectly what the agent is actually doing. Secondly, they can be noisy because they measure the output, which is not only influenced by the agent's effort but also by exogenous factors (Gibbons & Roberts, 2012). This last issue is related to the risk sharing as discussed above. Because of the exogenous influences on the output, the agent shares the risk with the principal and since he is risk averse, this leads to him putting in less effort. Here we see the tradeoff between risk sharing and incentivizing the agent again. The result of this tradeoff is the LEN-model, which was substantiated with microeconomic evidence by Holmström & Milgrom (1987). In this model, risk aversion is included in the agent's utility function and the noise term is included in the observed signal function. The wage consists of the salary and a variable part which consists of the bonus rate multiplied by the observed signal (which includes the noise term) (Gibbons, 2005; Gibbons & Roberts, 2012). For the principal it is crucial to determine the optimal bonus rate in each situation. This can be solved by the following equation (Gibbons & Roberts, 2012).

$$b^* = \frac{P'}{1 + r\sigma^2 C"}$$

In this equation, b^* is the incentive-compatible bonus rate, P is the principal's payoff, r is the agent's risk aversion, σ^2 is the variance and C is the agent's cost of action. The elements that determine the bonus rate (the optimal intensity of the incentives) are together called the *incentive intensity principle* (Linder & Foss, 2015, p. 346). These four elements are:

1. *"the incentive elasticity of profits […];*
2. *the risk tolerance of the agents […];*
3. *the effort elasticity of incentives […];*
4. *and the measurability of outputs […]."* (Linder & Foss, 2015, p. 346)

After the contract is offered by the principal to the agent, the agent chooses to accept or reject the proposed contract. If he accepts the contract, the agent makes a choice about how much effort to put in. He will base this choice on his maximum expected utility. This choice cannot be observed by the principal, but the principal can observe the agent's signals and thus he pays

the agent based on the signals. The output, based on the agent's choice regarding effort and the exogenous factors is received by the principal. The agent then receives his wage less the cost of his effort and the cost of bearing risk and the principal receives the output less the paid wage (Gibbons & Roberts, 2012).[6]

This basic version of this linear principal-agent model became widely known for its simplicity. The model is therefore seen as the 'basic' principal-agent model (see for example Holmström & Milgrom, 1991 and Gibbons & Roberts, 2012). However, the model only holds under a set of specific conditions (Gibbons, 2005, p. 3). Therefore, the classic model is not sufficient in all situations.

3.3.2 Dynamic principal-agent models

One important limitation to the static model described in the previous section is that it is a onetime shot model, which is not a realistic assumption. Employment contracts are mostly continuous relationships in which the parties respond to new information (Gibbons & Roberts, 2012) or new contracts are created that are based on the previous contracts (Prendergast, 1999, p. 45). These situations need a more dynamic model. There is a vast amount of contributions on dynamic principal-agent relationships, from which I can only discuss a few.[7]

Lambert (1983) was one of the first to study and stress the relevance of long-term contracts in principal-agent theory. He shows that the optimal incentive structure in one period is dependent on the agent's performance in previous periods. After his article, the relevance of long-term contracts was studied by more economists. From this literature it became clear that the dynamics of agency models matter in multiple ways. Firstly, it has been argued that dynamic principal-agent models lead to more efficient results, because the agent's effort can be measured better and, as a consequence, the moral hazard problem decreases (Holmström, 1983). Furthermore, an important characteristic of long-term principal-agent models is learning. By learning I mean that the principal and agent receive new information during the contract period. An example of this is the principal giving feedback to the agent. Gibbons and Roberts (2012) argue that feedback is useful when the principal wants the agent to change his behavior in the

[6] For an elaboration on how these results are derived, see for example Gibbons, 2005 and Milgrom and Roberts, 1992.

[7] For some overviews of other contributions see for example Yang, 1991, p. 290-291 and Prendergast, 1999, p. 45-55.

future, but that it is costly for the principal when he does not want the agent to change his behavior. Furthermore, feedback can sometimes give the wrong incentives, because it can push workers to put in more effort right at the moment when the principal is observing (in the period before the performance evaluation), which gives the wrong information to the principal (Ederer, 2010).

The theories described above change the basic static model. By considering the dynamic elements of real-life principal-agent relationships, they make the agency models more realistic than the one-shot linear model discussed before. However, Holmström and Milgrom (1987) found that dynamic models can under some conditions be modelled in the same (linear) way as static principal-agent models. The optimal incentive-compatible contract is in this situation the same as the optimal incentive-compatible contract in the static (linear) model. However, for this model Holmström and Milgrom made some assumptions. One of these assumptions is that the past days are not connected to the next day's effort and output (Gibbons, 2005, p. 3). This assumption is in most situations not realistic, because, as was shown in the theories described above, the past does often influence the decisions of agents in the future. Because the assumptions are so strong, Gibbons (2005, p. 3) proposes that the main relevance of this finding is that it shows that in nonlinear contracts, history is important.

3.3.3 Multiple agent models

Another common situation that needs a different model is the situation in which there are contracts with multiple agents. This model is very relevant for practical situations, because most employers have more than one employee. There are different models that analyze the situation with multiple agents. Many of these models are based on a comparison of multiple employee's performances (see for some of the first of these models Lazear & Rosen, 1981 and Holmström, 1982). In these contracts, the wage of an agent is based on this agent's performance relative to the other agents (Yang, 1991, p. 288). This is called *relative performance evaluation* (Holmström, 1982). Relative performance evaluation is only useful when the outcomes of the agent's actions are related to each other (Holmström, 1982, p. 335). In this way, the agent's performances can be compared and this creates competition between the agents. The relative performance evaluation provides benefits for risk sharing. When the outcomes of the agent's actions are related, there is a common underlying (moral hazard) risk. This risk can be reduced in a multiple-agent situation, because relative performance evaluation, for example the average output of all the agents, provides the principal with more information (Holmström, 1982).

Around the time relative performance evaluation was included in principal-agent models, it was already a widely-known and used compensation mechanism (Lazear & Rosen, 1981). It was therefore very relevant that it was now included in principal-agent models to assess the, in that time prevalent, benefits of this compensation scheme.

A team of agents can benefit the principal, but it can also impose extra costs. To reach an optimal team production the agents should cooperate (positive for the organization) and not collude (negative for the organization) (Holmström & Milgrom, 1990, p. 85). For the principal it is advantageous if the agents are able to monitor each other, because then a 'team incentive' is sufficient and individual incentives are no longer necessary (Holmström & Milgrom, 1990). A drawback of team situations is the free-riding problem. If the principal can only observe team output instead of individual output, it cannot be identified which agents work hard and which agents are free-riders. There are multiple solutions to this problem. For example, Alchian and Demsetz (1972) propose that the free-rider problem can be solved by monitoring the effort of the agents by the principal, whereas Holmström (1982) argues that in some situations the budget-balancing role of the principal is sufficient. After Alchian and Demsetz introduced the free-riding issue into principal-agent theory, a whole stream of literature on the problem of free-riding in principal-agent relationships was published.[8]

3.3.4 Multiple-task models

Another type of agency models are the models based on the problem of multiple tasks. The consequence of the multiple task problem is that the agent's contribution cannot be easily measured nor enforced (Gibbons, 2005, p. 4). The models have to be changed because the static model only deals with the agent having one task for which he has to make an effort. However, in the real world, agents often have multiple tasks and therefore the agent's total contribution is not easy to measure. This requires the principal to design the incentive contracts carefully. Otherwise, the agent will show behavior that is not what the principal wanted when he designed the contract. Kerr (1975) expressed this problem nicely in his famous paper.

This problem can be addressed by the multitask model as developed by Holmström and Milgrom (1991). In this model, other performance measures than the agent's total output are used (Gibbons, 2005, p. 4). The underlying idea of this model is that the performance measures should be designed so that they create incentives for the actions that are beneficial to the

[8] For an overview of this literature, see Prendergast, 1999, p. 39-44.

principal (Gibbons, 2005, p. 5). In designing these contracts it is important for the principal to consider all the different tasks an agent has, even when the principal is only designing incentives for one task (Holmström & Milgrom, 1991, p. 50).[9]

The paper of Holmström and Milgrom provided the basis for the acknowledgement of the problem of multiple tasks and lead to another way of thinking about incentives (in particular) in complex jobs. For example, relational contracts with subjective performance evaluation were used more often, because they can measure the agent's performance in a broader sense (Prendergast, 1999, p. 8-9). Relational contracts are a solution to the problem that the agent's total contribution cannot be easily measured and, more specifically, enforced (Gibbons, 2005, p. 4). Relational contracts are contracts that are not enforceable in court or by another third party (Gibbons, 2005, p. 6). These contracts are more suitable for specific situations (instead of general models), because the outcomes do not have to be established in a formal contract upfront (Gibbons, 2005, p. 6).[10] It can also be useful for organizations to use a combination of formal and relational contracts, because relational contracts reduce the chance of the 'rewarding A while hoping for B' problem, whereas formal contracts make sure the agent actually receives the reward he was promised (Gibbons, 2005, p. 7-8).

3.3.5 Multiple-level models

The last category of models I will introduce in this section are the multi-level models. In these models, the hierarchical organization is considered (Yang, 1991). The models add organizational divisions and supervisors. These supervisors monitor the employees in their division and they are monitored themselves by another level of supervisors or top management. This makes the incentive contracts more complex. Consequently, the basic model changes in a few ways.[11] While issues regarding hierarchy and multiple levels in organizations had already gathered the attention of institutional economists earlier, Mirrlees (1976) was the first to include multiple levels in a principal-agent model. Other models followed and made the models fit actual firms better (Yang, 1991).

[9] For a full explanation of the multiple task model see Holmström & Milgrom, 1991. See also for example Gibbons, 2005 and Prendergast, 1999.

[10] For models based on relational contracts see for example Gibbons, 2005 and Gibbons & Roberts, 2012.

[11] For an overview of multi-level principal-agent models see Yang, 1991, p. 289-290.

Some of the models also consider the benefits and costs of decentralization versus centralization. Decentralization in an organization means that the decision-making powers concerning different issues in an organization are delegated to lower-level divisions which are then more self-regulating. Mookherjee (2006) provides an extensive discussion of incentive design issues related to the choice between centralization and decentralization. He discusses multiple models which are all based on different assumptions. He concludes with mentioning some potential costs and benefits of decentralization. The most important costs arise from the problem of moral hazard that exists because of the goal incongruence between the principal and the agent to whom decision-making powers are delegated and because of the monopsony powers of the agent. The most important benefit of decentralization is that information processing tasks can be delegated and thus distributed, which decreases the costs of these processes. The main message of Mookherjee's paper is that the benefits of decentralization have often been overlooked in the agency theory literature and that research should focus more on these benefits (p. 387).

3.4 Incentives do not always work

In the previous section we discussed how incentives work. However, it has also been argued that incentives often do not work. For example, in 2013 Microsoft abandoned its 'stack ranking system', which payed employees based on their performance relative to other employees. The system turned out to demotivate collaboration and focus on internal competition instead of external, which was 'destructive' according to the employees within Microsoft (Pepitone, 2013). There are many other examples of failing incentive systems like these (for examples see Kerr, 1975 and Bowles & Polania-Reyes, 2012).

The reason for these failures can be that the incentive contracts are just not well designed. For example, not considering the agent's multiple tasks can lead to the problem of 'rewarding A, while hoping for B' (Holmström, 1991, p. 25 and Kerr, 1975). From this point of view, the incentives will work under the condition that they are well designed. However, the failure of incentives may also have more fundamental reasons. Some authors have argued that the underlying assumptions of neoclassical incentive theory are not right. An example of such an assumption is the assumption of the principal and agent being fully rational and self-interested. It has been shown by behavioral theory that people are seldom fully rational and often not completely self-interested (see for example Kahneman, 2003). With this knowledge, the

principal-agent models are no longer realistic. Therefore, the models are criticized for not being practically relevant (Linder & Foss, 2015, p. 347-349).

3.5 An introduction to motivation crowding theory

Among the criticisms on the underlying assumptions of neoclassical incentive theory is the literature on the motivation crowding effect. According to Frey & Jegen (2000), motivation crowding suggests that *"external intervention via monetary incentives or punishments may undermine, and under different identifiable conditions strengthen, intrinsic motivation."* In economics, extrinsic and intrinsic motivation are often seen as two separate motivations. This is called the *separability assumption* (Bowles & Polania-Reyes, 2012, p. 370). Motivation crowding theory acknowledges that intrinsic motivation and extrinsic motivation influence each other. Motivation crowding theory not only challenges the assumption of separability, but also other assumptions underlying the standard neoclassical agency theory discussed above. In particular, the assumptions of full rationality and utility maximization are challenged and this changes the form of the relationship between incentives and performance into a non-linear relationship.

The influence of extrinsic on intrinsic motivation can be positive. The extrinsic incentives are then crowding in the intrinsic motivation and extrinsic and intrinsic motivation are said to be complements. For example, when an employee receives the price for being the employee of the month, this (extrinsic) incentive might increase his self-esteem and increase his intrinsic motivation to work even harder in the next period (Frey & Jegen, 2000). In most cases however, the influence of extrinsic incentives on intrinsic motivation is negative (Bowles & Polania-Reyes, 2012, p. 371). The incentives are then crowding out the intrinsic motivation and they are said to be substitutes. An example is when employees are monitored in their performance, so that the principal can determine whether they will receive a bonus or not. This might cause the employee to lose the interest he had for his job intrinsically, because he actually liked his job (Kohn, 1993). When extrinsic incentives crowd out intrinsic motivation, they impose another cost of incentives next to the information rent: the *hidden cost of reward*. This cost should be taken into account in incentive design, because it changes the incentive compatible equilibrium.

Thus, motivation crowding theory considers intrinsic motivation. Intrinsic motivation is defined by Deci (1971, p. 105) as follows: *"One is said to be intrinsically motivated to perform an activity when he receives no apparent rewards except the activity itself."* According to Bowles

& Polania-Reyes (2012, p. 370), a person can be intrinsically motivated for many reasons. For example pride, the pleasure in doing a certain job, but also altruism and the desire to commit to social norms.

Because a person can be intrinsically motivated in many ways, there are also numerous underlying reasons for the motivation crowding effect. Bowles & Polania-Reyes (2012) discuss these underlying mechanisms. For example, if a principal provides an incentive for a certain task, this will provide information to the agent about the task. If this information is 'bad news', the agent will be demotivated by the incentive. Another reason can be that the incentive reduces an internal motivation for doing the task well. An example that is discussed before is the fact that some employees are demotivated when they are controlled by the principal (see also Frey & Jegen, 2000). Another example can be that a reward can influence the agent's reputation in a bad way ('he only does it to get the reward'), which decreases the agent's own intrinsic motivation to do the task as well as possible (Gneezy, Meier & Rey-Biel, 2011, p. 192-193). These and other explanations for the motivation crowding effect will be discussed more extensively in chapter 4.

3.6 Conclusion

The basics of neoclassical principal-agent theory are discussed in this chapter. We now have an understanding of why organizations use incentives and how they work in theory. The theoretical concepts in principal-agent theory mostly came up in the final quarter of the 20th century. By the end of that century, principal-agent theory had become part of mainstream economic theory (Dix, 2014, p. 131-132).

The question is if these theoretical models can really say anything about the real world. By adding real-world factors as long-term contracts, employee teams, hierarchies and the complexity of jobs, the basic model did certainly become closer to how incentives work in the real world. However, whereas the models became more realistic, at the same time there are still criticisms on the principal-agent models. It is argued that some of the underlying assumptions of the models are still too strict and that the models can therefore not be generalizable to real life situations (see for example Worsham, Eisner & Rinquist, 1997). As a matter of fact,

empirical evidence does not unambiguously support the models described above (Prendergast, 1999, p. 55-58).[12]

One of the theories that provides a fundamental reason for criticizing the neoclassical models is motivation crowding theory. This theory states that it is too simplistic to model incentives and the responses to these incentives as linear relationships, because incentives affect people's intrinsic motivation. The development of the motivation crowding concept will be discussed in detail in chapter 4. In this chapter the contributions of motivation crowding theory to incentive theory as explained in this chapter will also be mentioned. In chapter 5, I will sketch the development of motivation crowding theory against the background of the development of incentive theory in general and I will discuss the ways in which motivation crowding contributed to incentive theory.

[12] With regard to this criticism, we should – in defense of neoclassical mathematical models - not forget that the purpose of mathematical models is not necessarily to be applied directly to the real world. The models are simplified and rely on assumptions so that they can be abstract clarifications of more complex real-world situations (Dix, 2014).

Chapter 4 A conceptual history on motivation crowding theory

4.1 Introduction

This chapter outlines the development of motivation crowding theory from 1970 up to today, by discussing contributions of authors of several interdisciplinary fields. The first time I encountered the term "motivation crowding" in my research was in a paper by Frey (1992). However, Frey's paper of 1992 was not the invention of the concept of motivation crowding. As mentioned before, the underlying idea of motivation crowding theory was already invented by Titmuss in 1970. Titmuss is a sociologist and the concept of motivation crowding thus first came up in this field. At the same time, the concept was also being explored in the field of cognitive psychology. For a good understanding of the early development of the motivation crowding concept, it is important to discuss some of these papers, because they made the first steps in this theory. Therefore, in paragraph 4.2 the main contributions to the development of the theory before 1992 will be summarized. In paragraphs 4.3 to 4.6, the contributions to motivation crowding theory that actually use this term will be discussed. Paragraph 4.7 will discuss some applications of motivation crowding theory in real-life situations over the years.

4.2 The development of motivation crowding theory before Frey's 1992 paper

In chapter 3 I argued that from the 1970's onwards, principal-agent theory, mechanism design theory and mathematical modeling were popular in mainstream economics. The core underlying assumption of this principal-agent theory was that the way people act can be determined by extrinsic incentives. This assumption is based on the concept of rationality. Thus, when Titmuss argued that paying people for their blood donations might decrease people's intrinsic motivation to donate, this was indirectly an attack on the core underlying assumptions of mainstream economics. That was probably the reason that some economists felt they could not ignore Titmuss' argument. Arrow (1972) was the first economist to respond to Titmuss' book. He criticized the suggestion that a market for blood leads to less blood donations because, according to Arrow, Titmuss (1) presented no empirical evidence and (2) he did not give any theoretical explanations for this effect. Since Arrow was an important name in economics at that time, his paper can be viewed as the response of the mainstream economics discipline. In response to Arrow, philosophers Singer (1973) and Mack (1989) came to Titmuss' defence. Singer (1973) clarified Titmuss' argument underlying the motivation crowding theory and

pointed at some empirical evidence as well as theoretical explanations that were present in Titmuss' book. Mack (1989) stressed the danger of commodification (expressing everything in money). When people get paid for donating blood, they lose the idea that they are donating blood to save someone's life and this can, according to Mack, indeed lead to less donations.

Around the same time, the theory also came up in cognitive psychology, where it was named *cognitive evaluation theory* (Deci, 1972). Cognitive psychology was starting to come up as a science that studied human decision-making by looking at mental processes. The rise of cognitive psychology can be seen as a countermovement against the mathematical models of decision-making that prevailed in economics at that time (Staw, 1977). Moreover, experiments had come up as a popular research method in economics from the 1960's (Royal Swedish Academy of Sciences, 2002, p. 2-3). Experimental economists tested economic theories in laboratory experiments. These two new developments merged together when cognitive psychologists started to use experiments to study human behavior.

Cognitive evaluation theory states that a person who initially does something because he is intrinsically motivated and who then receives a reward for this action, perceives the action in another way because he is now doing it for the reward. As Deci (1972, p. 223) states it, *"he cognitively reevaluates the activity as one which he does because it provides him with external rewards."* And this reevaluation crowds out the intrinsic motivation. In a series of experiments, which he reviews in his 1972 paper, Deci found evidence for this cognitive evaluation effect.

After identifying the existence of the cognitive evaluation theory, the next step was to determine the underlying processes of this effect and the conditions and circumstances under which the effect exists. This was done by, amongst others, Deci (1975) and Deci & Ryan (1985). Deci (1975) discusses the, according to him, two underlying processes of cognitive evaluation theory extensively. The first of these processes is a 'change in perceived locus of causality' (Deci, 1975, p. 138). This process is called the *overjustification effect* (Lepper, Greene & Nisbett, 1973). In a field experiment with children, evidence was provided for the overjustification effect (Lepper, Greene & Nisbett, 1973). In the experiment, some of the children were promised a reward for a drawing activity. After being promised the reward, the children showed less interest in the drawing activity than children who were not promised a reward. The overjustification effect states that this is the case because the reward gives the children the idea that they wanted to draw because of the reward and not because they actually liked it. They now see drawing as a means to receiving the reward instead of the goal itself. This decreases

their intrinsic interest for drawing (Lepper, Greene & Nisbett, 1973, p. 130). However, the authors do emphasize that this experiment should not be generalized to other incentive situations, because the circumstances are too specific (Lepper, Greene & Nisbett, 1973, p. 136). The second process which can be underlying cognitive evaluation theory is based on *self-determination theory* and occurs when someone's feeling of internal competence changes (Deci, 1975, p. 141). When someone receives a reward that makes him feel less competent, his intrinsic motivation for the activity decreases.[13] This can also work the other way around (crowding in): when a reward increases the feeling of internal competence, intrinsic motivation will increase.

Deci and Ryan (1985) mention 3 factors that may determine how the extrinsic incentive works on intrinsic motivation (p. 87-88):

1. The interpersonal context: the relationship and communication between the principal and the agent and the way in which the incentive is given can determine how the incentive is perceived; e.g. as controlling or as supportive.[14]
2. Individual differences: differences in how people act; e.g. they can act because they are interested in the activity or because they want to receive a reward
3. The possibility that sometimes extrinsic incentives do not even have any effect, because the person's behavior is in that case fully regulated by internal processes.

4.3 The introduction of motivation crowding in economics by Bruno Frey

The concept of motivation crowding gathered some attention in the field of organizational behavioral economics, a subfield of behavioral economics that is concerned with how people behave in organizations. This is proven by the extensive discussions of the theory by, amongst others, Staw (1974) and Notz (1975). The theory was also picked up as an argument against

[13] For the same argument see also Bénabau & Tirole (2003), p. 501.

[14] Van Lange (2000) also stresses the importance of interpersonal processes. He argues that interpersonal processes such as sympathy, commitment and trust and the ways through which these processes are communicated play a large role in motivation crowding effects (p. 311). Many other authors found that the framing, form and presentation of the extrinsic incentive do indeed partly determine the effect of the incentive on intrinsic motivation (see Howard (2007); Schwab & Ostrom (2008); Harvard Law Review (2010); Johnson and Ellis (2011) & Hossain & King Li (2014)). A somewhat similar argument was made by Young, Beckman and Baker (2012). They argue that the effect of extrinsic monetary incentives is contingent on how the extrinsic incentive is perceived by employees to be consistent with their values and needs.

mainstream economics by for example Lane (1991). It is no surprise that the concept gathered attention in organizational behavioral economics, because behavioral economics, together with cognitive psychology, was becoming more and more popular around this time (Sent, 2004, p. 754).

However, apart from these papers in behavioral organizational economics, nothing really happened with the findings in cognitive psychology. Titmuss was also largely ignored. Mathematical models still prevailed in mainstream economics. More generally, cognitive psychology and behavioral economics were only starting to make their entrance in economics (Royal Swedish Academy of Sciences, 2002, p. 10 and Sent, 2004). Moreover, most cognitive psychologists and behavioral economists still worked with the mathematical models, in which they tried to incorporate cognitive and behavioral insights (Sent, 2004, p. 754). Experiments as those by Lepper, Greene and Nisbett (1973) were still new and not really acknowledged as a sound research method yet in economics. As a consequence, the findings described in the previous paragraph did not gather a lot of attention in economics and were mostly ignored, because they challenged the rationality assumption behind the theory of incentives.

That changed in 1992, when Bruno Frey introduced the concept into economics as motivation crowding (Frey, 1992). In the beginning of the 1990's the timing was right, because with the rise of pluralistic perspectives as experimental economics and behavioral economics it had become more and more visible that mathematical models were limited in their contributions to predicting real economic behavior (Sent, 2004).

Frey described some economic situations in which the motivation crowding effect can play a role. He acknowledges that incentives can have an effect on intrinsic motivation and he argues that this effect depends on how the extrinsic incentives are designed. His arguments are based on cognitive evaluation theory. In this first paper on motivation crowding, Frey argues that pricing incentives have a negative effect on people's self-evaluation, whereas regulation incentives have a positive effect on people's self-evaluation, because regulation can imply if an activity is morally good (Frey, 1992). On the contrary, about 10 years later, Bohnet, Frey and Huck (2001) argue that less regulation can sometimes lead to crowding in of intrinsic motivation and thus to better results.

Frey (with different co-authors) follows up his 1992 paper by a number of other papers and books on the motivation crowding effect, in which he warns economists to be aware of the motivation crowding effect (Frey, 1993). In his multiple works, Frey and his co-authors come

up with a set of conditions under which motivation crowding out and crowding in exist (Frey (1993, 1994, 1997) and Osterloh, Frey and Frost (2001)). The conditions they come up with are the following:

1. The personality of the relationship between the principal and the agent. If they have a more personal relationship, the agent's intrinsic motivation is more likely to be crowded out by extrinsic incentives.
2. The interest the agent has for the activity. If the agent is highly interested in the activity he has to do, setting an extrinsic incentive on this activity is more likely to crowd out the agent's intrinsic motivation for the task.[15]
3. The participation possibilities the agent has. If the agent has more opportunities to be involved in the decision-making processes, his intrinsic motivation is more likely to be crowded out by extrinsic incentives, because the self-determination effect is then stronger. Incentives that give people a feeling of autonomy and/or empowerment are more likely to crowd in intrinsic motivation.[16,17]
4. If the extrinsic incentive makes a distinction between agents that have a high intrinsic motivation and agents that have a low intrinsic motivation. These incentive systems are more likely to crowd in intrinsic motivation.[18]
5. The type of extrinsic incentive. Monetary rewards are less likely to crowd out intrinsic motivation than regulation.[19]
6. The extent to which the extrinsic incentive is contingent on the agent's performance. If this contingency is stronger, the crowding out effect is likely to be stronger.

[15] In the public sector, clear evidence was found for this condition (Weibel, Rost & Osterloh, 2010).

[16] See also Akers & Yasué (2019).

[17] This argument contributes to the literature on multi-level principal agent models. It does not directly provide a benefit or a downside of decentralization, but it shows that, in making the decision between centralization and decentralization, the motivation crowding effect should also be taken into account.

[18] See also Kyriacou (2010), who considers the motivation crowding effect and free-riding issues in team situations. He notes that the size of the team is relevant, because it is easier to implement selective incentives in a small group than in a large team, considering the problem of free-riding.

[19] In the literature that followed, there seems to be disagreement on this matter. Gneezy, Meier & Rey-Biel (2011) and Akers & Yasué (2019) concluded that non-monetary benefits are less likely to crowd out intrinsic motivation, whereas Dragone, Galeotti and Orsini (2017) found that non-monetary benefits (in this case negative feedback) can also crowd out intrinsic motivation.

7. The extent to which the extrinsic incentive implies the acknowledgement of the agent's intrinsic motivation. If this acknowledgement is stronger, crowding in is more likely to occur.
8. How hard the regulation is. Hard regulation is more likely to crowd out intrinsic motivation than soft regulation.[20]
9. How commanding and controlling the extrinsic incentives are. When the extrinsic incentives are more commanding and controlling, they are more likely to crowd out intrinsic motivation.
10. Whether distributive and procedural norms are violated in determining the extrinsic incentives. If this is the case, the extrinsic incentives are more likely to crowd out intrinsic motivation.

Frey applied motivation crowding theory to multiple fields, among which organizational theory. Together with Bohnet, he developed an 'institutional framework' to determine the institutional contexts that are likely to crowd *in* intrinsic motivation (Bohnet & Frey, 1997). The incentive mechanisms that were designed according to this framework are called *'motivation compatible mechanisms'*. To create a motivational compatible mechanism, two factors are necessary: self-determination of the agent and acknowledgement of the agent's intrinsic motivation (p. 715). Osterloh and Frey (2000) discuss the transfer of knowledge in organizations and argue that there are certain organizational forms that are more likely to crowd out intrinsic motivation, and can therefore lead to a worse transfer of knowledge. They conclude that motivation crowding effects should be considered by firm managers, because they change the optimal incentive structures. In this paper, Osterloh and Frey argue that agency theory and the transaction cost theory are not complete without taking into account motivation crowding.

Frey was also interested in the relationship between motivation crowding and happiness. This relationship exists in a number of ways. For example, an important part of job satisfaction is the intrinsic motivation for the job. And if this intrinsic motivation is crowded out, then job satisfaction disappears, which makes people less happy (Frey & Stutzer, 2002). Job satisfaction is also important for the employer, because when employees cannot be controlled completely

[20] In the context of environmental policy, Frey (1999) shows how extrinsic regulation incentives should be implemented to be optimal. He argues that extrinsic regulation incentives should be either hard (for a strong price effect) or soft (to avoid crowding out), but not intermediate to be optimal (p. 407). This argument was later confirmed by Grund & Westergaard-Nielsen, who called it the 'U-shape hypothesis' (2008).

it is important that they are intrinsically motivated (which, according to Frey and Stutzer, goes hand in hand with job satisfaction).[21] Another way in which happiness economics has something new to add to the motivation crowding theory is the reverse of the argument described above. Where intrinsic motivation can lead to happiness (in the form of job satisfaction), more happiness also leads to higher intrinsic motivation. Frey and Stutzer (2002, p. 181-182) therefore argue that employers should design their workplaces and incentive structures so that employees are happier and thus more intrinsically motivated, which will make them perform better at work. Although happiness economics and motivation crowding theory both were popular topics in economics in the past 20 years, Frey and Stutzer's work has only limitedly been followed up yet by more research on this combination of topics.

Frey also was very likely the first who wrote about *the spillover effect* of motivation crowding (Frey, 1993). The motivation spillover effect, also called *motivational transfer effect*, exists when the crowding-out effect of incentives spreads over to other areas, times and persons (Frey & Jegen, 2001, p. 146). In organizations, extrinsic incentives might not only crowd out the intrinsic motivation of the employee for the specific task he receives the compensation for, but this effect might also spill over to other employees who also lose their intrinsic motivation and to other aspects of the work, for which employees also lose their intrinsic motivation (Frey & Jegen, 2001, p. 146).[22] Frey and Jegen hypothesized some factors that determine the strength of the motivation spillover effect. Factors that might strengthen the motivation transfer effect are (Frey & Jegen, 2001, p. 149):

- Proximity: e.g., it is more likely that motivation is crowded out shortly after the incentive was given than long after the incentive was given.
- Similarity: e.g., when two areas of work are very similar to each other, it is more likely that an incentive in one area of work does also crowd out the intrinsic motivation in the other work area.

[21] Note that Frey and Stutzer provide no evidence for this argument. Thus, it is not clear if the motivation crowding effect also really works with job satisfaction, for which Green and Heywood (2008) found no evidence in their quantitative study.

[22] Malholtra and Murnighan (2002) apply the spillover effect to team situations: extrinsic incentives that are imposed on one agent can influence the intrinsic motivation of other agents (for example other team members), because then they attribute the agent's behavior to the extrinsic incentive instead of to his intrinsic motivation. This argument contributes to the literature on incentives, because it complicates the designing of incentives in teams.

- Familiarity: e.g., if people are closely related, it is more likely that their motivation will also be crowded out when the motivation of the other person is crowded out
- Norms, conventions or customs: e.g., people have the same norms, it is more likely that they (unconsciously) take over the motivation crowding effect from other people.

It is clear that Frey made big steps in the development of motivation crowding theory. He showed the consequences of the motivation crowding effect and he advised policy makers to take these consequences of the motivation crowding effect into account and to maintain, promote and have trust in people's intrinsic motivation (p. 105-117). He also proposed some implications for economic theory, so that it takes into account the motivation crowding effect in studying people's behavior (p. 118-125). Since Frey is an economist, his writings mark the introduction of the motivation crowding effect into economics. In this context, it is important to note that Frey stresses that he does not give up the 'rational choice framework'. He included the motivation crowding effect in a mathematical principal-agent model to show mainstream economists that the theory could fit within their framework. In this way, Frey converged the experimental findings in cognitive psychology and his own experimental findings with the mathematical models. Hence, his writings should not be seen as a criticism of neoclassical economics, but more as an attempt to merge the idea of motivation crowding into the mainstream economic ideas. It is an interesting question if Frey himself really saw motivation crowding theory as compatible with the underlying rationality assumption of mainstream mathematical economics, or if he stressed this so that the economics discipline would acknowledge the theory.

4.4 Initial scepticism of motivation crowding theory

Around the time Frey was attempting to include the motivation crowding concept in economics, many economists were initially following Arrow and still rejected the theory. Although Frey stresses that motivation crowding theory should not be seen as an attack of the market, Bowles (1998) does feel like he has to defend the market. He discusses the evidence on motivation crowding theory but concludes that *"the relevant data provide little support for the anti-market normative inferences sometimes thought to follow"* (p. 91). Firstly, he argues that other incentives than monetary rewards (also non-market incentives) can also crowd out intrinsic motivation. Secondly, he argues that extrinsic incentives might crowd out intrinsic motivation for interesting tasks, but not for tasks people are not intrinsically motivated to do. Thirdly, he argues that the market also really supports feelings of self-determination, because people are

free to choose for themselves. In an influential paper, Prendergast (1999) argued that there is little empirical evidence for the theory, especially in employer-employee settings (p. 18).[23] He expects that the experiments which have provided evidence for the motivation crowding out effect will not be present in these workplace settings, because, according to him, employees often have little intrinsic motivation for their work in the first place. Since Prendergast (critically) discusses the state of the art incentive theories that were used in organizations in his paper, it is clear that motivation crowding theory was not established yet as state of the art in 1999.

Especially in the early stages of the development of cognitive evaluation theory and motivation crowding theory, there were also psychologists as well as (behavioral) economists who disagreed with the idea that the motivation crowding out effect was something to take into account. In their opinion, extrinsic incentives worked as nudges to foster the desired behavior.[24] For example, both the psychologist Carton (1996) and the behavioral economist Kreps (1997) were sceptical about motivation crowding theory. Eisenberger and Cameron (1996) and Eisenberger, Pierce and Cameron (1999) nuance the importance of the cognitive evaluation theory, based on a meta-analysis of studies on this theory (Eisenberger & Cameron, 1996) and based on the psychological *general interest theory* (Eisenberger, Pierce & Cameron, 1999).[25] Their arguments are as follows:

[23] For another criticism on motivation crowding theory see Kunz and Pfaff (2002), who concluded based on a theoretical and empirical analysis of motivation crowding theory that it exists only under some very strict conditions. See also Miller (2004), who proposed an alternative solution to the crowding out effect in a long-term relationship, based on repeated game theory and rationality of both the principal and the agent. His reasoning is that, when the employee expects the employer to monitor less strictly until he picks up signals that the employee is not putting in enough effort, the employee will put in enough effort. Hence, motivation crowding theory is not needed to explain the so called 'control paradox' (in which performance is lower when employees are more strictly controlled).

[24] For early criticisms on cognitive evaluation theory see for example Scott (1975) and Flora (1990). In response to Scott, Deci (1976) argues that the criticism of Scott is based on a metatheoretic assumption of 'reinforcement histories and contingencies in the present' that Deci does not agree with.

[25] General interest theory looks at the content and context of the activity and states that personality and culture are important, because they influence people's intrinsic motivation (Eisenberger, Pierce & Cameron, 1999). Eisenberger, Pierce & Cameron (1999) argue that motivation crowding theory does not take this into account. However, motivation crowding theory can take these factors into account: see for example Benkler (2004), who considers the impact of different social and cultural contexts. He argues that the effect of the extrinsic incentive on the intrinsic motivation depends on the context in which the incentive is given. See also Houston (2011), who

1. Crowding in effects are at least as important as crowding out effects.
2. The crowding out effect occurs only under "*highly restricted, easily avoidable conditions"* (Eisenberger & Cameron, 1996, p. 1154).
3. The effect of extrinsic incentives on intrinsic motivation can be best understood by *"mechanisms of instrumental and classical conditioning"* (Eisenberger & Cameron, 1996, p. 1154). Simply said, they mean that well-designed incentives do support the desired behavior.
4. Using behavioral theory, it is possible to design the incentives so that crowding in of intrinsic motivation occurs (Eisenberger & Cameron, 1996).
5. The crowding-out effect occurs more often in situations where performance is hard to measure (Eisenberger, Pierce & Cameron, 1999).

4.5 A growing interest and a stream of literature on the motivation crowding effect

4.5.1 Experiments

From the beginning of the 21st century, a great interest came up for the motivation crowding concept in the literature. Initially, mostly behavioral and institutional economists were interested in motivation crowding theory. Around that time, both institutional economics and behavioral economics had become part of mainstream economics (Williamson, 2000 and Sent, 2004). Often on the basis of experiments, the behavioral and institutional economists tried to find evidence and new explanations and rationalizations for motivation crowding theory.[26] This is no surprise, since experimental economics had in the meantime established itself as one of the most popular research methods in economics (Royal Swedish Academy of Sciences, 2002, p. 1). Laboratory experiments as well as field experiments were performed to test if the motivation crowding effect existed under certain conditions (e.g., in a certain institutional context). In most of the experiments, motivation crowding (out and/or in) effects were found.[27]

found evidence for the argument that national context matters for the effect of extrinsic incentives on intrinsic incentives.

[26] Whereas most of the studies on motivation crowding were performed as experiments, some other studies have also been performed. See for example Kuvaas et al. (2017), who did a quantitative analysis in which a negative correlation was found between extrinsic incentives and intrinsic motivation.

[27] See for example Frey & Oberholzer-Gee (1997), Fehr & Gächter (2000), Gneezy & Rustichini (2004), Lazzarini, Miller & Zenger (2004), Irlenbusch & Sliwka (2005), Güth, Sutter & Verbon (2006), Falk & Kosfeld (2006), Georgellis, Iossa & Tabvuma (2011) for specific sectors in the public sector, Schildberg-Hörisch & Strassmair (2012), Engel & Kurschilgen (2013), Wrzesniewski et al. (2014), Kuwabara (2015) and Kerr et al. (2019).

However, in other experiments, there were no or very limited findings of motivation crowding.[28] A subfield of behavioral economics that has recently developed itself is neuroeconomics. A few neurologic experiments provided evidence on the existence of the motivation crowding effect (Li, Xiao, Houser, Montague & Smith (2009); and Murayama, Matsumoto, Izuma, Matsumoto & Smith (2010)).

4.5.2 Rationalizations and explanations for motivation crowding

Economists from different disciplines, using different research methods, tried to find explanations and rationalizations for motivation crowding theory. A psychological explanation is cognitive dissonance theory (Bardsley et al., 2010).[29] This theory advocates that people who are paid a lot do not have to convince themselves that a task is interesting, whereas people who receive less do have, because otherwise they will be doubting why they are even performing the task.

Where initially mainstream economics was sceptical about motivation crowding theory, after a few years some – but still just a few – neoclassical economists picked up the motivation crowding concept and tried to include it in their principal-agent models. Canton (2005) included intrinsic motivation in a multiple-task model. Based on this model, Canton argues that strong incentives are more likely to crowd out intrinsic motivation, whereas weak incentives are more likely to crowd in intrinsic motivation. Hereby, he contributed to the multiple-task principal-agent model discussed in chapter 3 by arguing that we should consider implementing weak incentives to solve the multiple task problem. Moreover, Bénabau and Tirole (2006) tried to rationalize motivation crowding theory so that it fit better within mainstream economics. They included reputational motivations in a model for prosocial behavior. They argue that there is yet another mechanism underlying the motivation crowding out effect: the concern for keeping a good image. When someone is rewarded for a certain task, this person might feel that other people do no longer think his motives for doing this task are purely good ('he only does it for the bonus'). This decreases his intrinsic motivation for the task. This effect is called *signaling*

[28] See for example Charness & Gneezy (2009), Harbring & Irlenbusch (2011), Kessler & Leider (2012), Bengtsson and Engström (2014), Ederer and Manso (2013).

[29] See also Deci (1975), p. 161-168.

theory.[30] The fact that well-known economists as Bénabau and Tirole picked up the motivation crowding effect was a step further in the acknowledgement of economics of the motivation crowding theory. However, just like Frey, they still placed motivation crowding theory within the neoclassical framework, by emphasizing that the motivation crowding effect could be reproduced in a mathematical model and works in a rational way (Bénabau & Tirole, 2003, p. 516).

Many behavioral and institutional economists studied all kinds of different conditions under which the motivation crowding effect exists. The findings of these studies contribute to the literature on incentives, by showing how incentives should be applied in different situations. Policymakers and incentive designers can benefit from these findings. Gächter & Falk (2002) consider the importance of long-term interaction labour relations and social norms. They study this in a repeated game experiment. They find that repeated game incentives crowd in social norms (such as reciprocity). Thus, social norms have a stronger effect in long-term (labour) relations. On the contrary, Irlenbusch and Ruchala (2008) found evidence for a motivation crowding out effect in a repeated game setting. Their experiment was different though, as they studied team-based incentives and mainly tested for the effect of relative rewards (which leads to competition) on voluntary cooperation. Both of these studies contribute to the literature on dynamic principal-agent models. They confirm that history is indeed important in non-linear contracts for multiple reasons (e.g. the growing importance of social norms and the long-term effect of competition). Moreover, the study of Irlenbusch and Ruchala nuances the benefits of relative performance evaluation, by showing the downsides of the competition due to this way of measuring performance.

Next to this contribution to the issue of relative performance evaluation, motivation crowding theory also contributed in other ways to principal-agent models with multiple agents. E.g., in team situations, the beliefs and expectations people have about each other are important for how the extrinsic incentive influences these people's intrinsic motivation. If an employee expects that his colleagues are going to free-ride, then extrinsic incentives will work. But if the employee expects his colleagues to contribute voluntarily, then extrinsic incentives will crowd

[30] The existence of the signaling theory is empirically confirmed by Ariely, Bracha and Meier (2009) in a laboratory as well as a field experiment. Here we see again that experimental findings regarding motivation crowding converged with mathematical models.

out this employee's intrinsic motivation (Kahan, 2003). Thus, in designing incentives for teams, it is important to take into account the employee's expectations about each other.

Malhotra and Murnighan (2002) and Irlenbusch (2006) applied motivation crowding theory to the issue of binding versus non-binding contracts. Malhotra and Murnighan (2002) found that non-binding contracts work better as extrinsic incentives, because they strengthen intrinsic motivation in the form of interpersonal trust. Irlenbusch (2006) also confirms that non-binding contracts may work better to avoid motivation crowding out. This is an important addition to mainstream incentive theory, because it suggests that relational contracts should maybe substitute (or complement) formal contracts more often.

Mellström and Johannesson (2008) tested Titmuss' theory in a field experiment and found that the effect of extrinsic incentives on intrinsic motivation differs between men and women: women 'suffer' more from the motivation crowding out effect (at least in the context of blood donation).

Libson (2014) found that it matters if an extrinsic incentive is a commission (giving something) or an omission (not giving or having something). The motivation crowding out effect turned out to be stronger for commissions than for omissions. His policy suggestion based on these findings is that omissions might work better than commissions, because they suffer less from the motivation crowding out effect.

Giebelhausen, Chun, Cronin & Hult (2016) tested not only for the effect of self-benefiting incentives, but also for the effect of incentives that benefit other people (for example being able to make a donation) and a mix of self-benefiting and other-benefiting incentives on intrinsic motivation. They found that other-benefiting incentives can work under certain circumstances, but that a mix of incentives crowds in intrinsic motivation the most.

Recently, motivation crowding theory was extended by the finding that formal institutions (such as laws) can crowd out intrinsic motivation in the form of cultural norms and values over multiple generations. The reason for this is that in the existence of these formal institutions, parents find it less important to teach their children these norms and values (Lowes, Nunn, Robinson & Weigel, 2017). This finding makes it even more important to be careful of motivation crowding out effects when designing incentives.

4.5.3 New accounts for motivation crowding

Recently, some authors have been trying to come up with different accounts to explain the way the motivation crowding effect works. Goeschl and Perino (2012) argue that cognitive evaluation theory alone is not sufficient to explain the mechanism behind motivation crowding and they offer an affect-based account. This means that extrinsic incentives should be matched with the moral motivations of the person they are targeted to, by looking at the emotional response of people at the extrinsic incentive (p. 209-210).

Zhong (2011) provides yet another account of motivation crowding theory, by showing that the motivation crowding effect does not even need any extrinsic incentives to work: it can already exist when the mindset of the agent is changed into a more *"deliberative, calculative mindset"* (p. 19). Schwartz (2007) went even further by suggesting that extrinsic incentives not only crowd out intrinsic motivation by suppressing it, but also by destroying it altogether and by doing that changing the nature of people. These contributions of Zhong and Schwartz come from an ethical perspective. This perspective will be discussed in more detail in paragraph 6 of this chapter.

4.5.4 Solutions to the motivation crowding out problem

In a later phase of the development of motivation crowding theory, when more knowledge existed on this effect and the conditions under which it worked, some solutions to the motivation crowding problem were proposed. Kritikos and Tan (2009) described the incentive structure of an indenture game: the principal gives half of the incentive (for example, half of the bonus) to the agent upfront, and after the agent performed the activity the principal can decide if he also gives the other half of the incentive. The conclusion of this paper is that designing extrinsic incentives as an indenture game works well for extrinsically motivated people, but at the same time does not crowd out intrinsic motivation for people who are intrinsically motivated.

In the current time of active citizenship, another solution to the motivation crowding out problem that was proposed is the current turn from a welfare state to a *participation society* (Heins, Fenger & Broekema, 2019). In fact, motivation crowding theory is one of the reasons for this development. In the participation society, the government stimulates people's self-organising intrinsic incentives and tries to 'crowd in' intrinsic motivation to help others. This paper illustrates that motivation crowding theory is, over the years, used more and more as a

reason to fundamentally change the mainstream economic policy instead of an addition to mainstream economics.

4.5.5 Overview papers

It is easy to lose the bigger picture in all these experiments and other forms of evidence. Therefore, meta-analysis papers that bring together this evidence are very useful. From the meta-analysis of Deci, Koestner and Ryan (1999) it follows that motivation crowding does play an important role. They reviewed 128 studies and concluded that motivation crowding very often exists. This meta-analysis was published in a psychological journal, because, except for Frey's contributions, up until that time most of the experiments were performed in the field of cognitive psychology. A decade later, after the stream of literature in economics on motivation crowding, another literature review was done by Gneezy, Meier & Rey-Biel (2011). They stressed that the (positive and/or negative) effects of motivation crowding are highly dependent on the conditions under which the extrinsic incentive is implemented. This paper provides a useful summary of the main contributions to motivation crowding theory and has become one of the most influential papers of the past years in this field.

The turn by Bowles illustrates the acknowledgement of the existence of the motivation crowding effect over time. Where he was sceptical of the theory at first[31], in 2012 he wrote a comprehensive paper on the motivation crowding theory together with Polania-Reyes (Bowles & Polania-Reyes, 2012). In this paper, they survey 50 experiments on the motivation crowding in and out effect and establish four mechanisms underlying the motivation crowding effect:

1. The extrinsic incentive can tell the agent that the principal believes the activity for which the extrinsic incentive is provided is not interesting or it can show that the principal is self-interested, which can both decrease the agent's intrinsic motivation.[32]
2. By implementing an extrinsic incentive, a 'social norm' can be constructed which is seen by agents as the norm for their behavior. If this social norm is individual utility maximization, then this may decrease the agent's intrinsic motivation for the activity.[33]

[31] See paragraph 4.4.

[32] See also Ellingsen and Johannesson (2008).

[33] For the same argument, see Sliwka (2007). See also Huck, Kübler and Weibull (2003), who argue based on a team-production model that it is important to consider social norms. Tayler & Bloomfield (2011) argue that the effect of extrinsic incentives on intrinsic motivation through norms is actually an indirect effect.

3. Extrinsic incentives can diminish the agent's feeling of autonomy, which reduces his intrinsic motivation (self-determination).
4. When an organization uses a lot of extrinsic incentives, it might be harder for agents to learn new forms of intrinsic motivation.

Bowles and Polania-Reyes conclude that organizations can use the insights of motivation crowding theory to optimize their incentive structures so that they crowd in (instead of crowd out) intrinsic motivation. Thus, their solution to the motivation crowding problem is proper incentive design.

Although motivation crowding theory has been accepted more widely nowadays, there are still doubts about the relevance of the theory in mainstream economics. These doubts were reinforced by studies that found evidence that shows that the motivation crowding effect has only limited practical relevance. From a study based on an agent-simulation model for example, Baumann and Stiglitz (2014) conclude that the motivation crowding out effect should not be seen as a real danger.[34] Furthermore, based on a literature review, Gerhart, Fang and Ledford (2013) concluded that the problem of motivation crowding out does mostly play no important role in the practice of incentivizing people.[35] However, the fact that a renowned economist as Lazear takes the motivation crowding theory into account in his recent paper on incentives in organizations (Lazear, 2018), tells us that the theory is generally being acknowledged in mainstream economics these days.

4.6 Ethical considerations regarding motivation crowding theory

A recent development in motivation crowding theory is that some authors started to raise ethical questions about the motivation crowding effect related to well-being. Schwartz (2009) argues that while extrinsic incentives might work to increase performance, they are still 'bad' when they lead to a decrease in happiness (in the sense of intrinsic motivation) for the agent in doing the task. Atiq (2014) makes a similar argument. He emphasizes that it is not sufficient to just look at the outcomes, but that it is important what the character of our motivation is. According to him, extrinsic incentives crowding out motivation is an *'inherently bad outcome'* (p. 1115),

[34] See also Green and Heywood (2008).

[35] This paper classifies the literature on effects of extrinsic incentives on intrinsic motivation in 5 'theories'. However, in my opinion, at least 4 of these theories (except for general interest theory) all come down to the same underlying idea: extrinsic incentives can crowd out or crowd in intrinsic motivation under certain conditions.

regardless of what the payoffs of the extrinsic incentives are. Ims, Pedersen and Zsolnai (2014) also see the loss of intrinsic motivation as morally bad. Therefore, they argue, it is time to look at people and organizations differently: they should no longer be seen as '*instruments to produce increased profits and financial wealth'* (p. 358). Moreover, it has been argued that higher income (more extrinsic incentives) will crowd out intrinsic motivation to disapprove of unethical behavior, and will thus lead to more unethical behavior (Wang & Murnighan, 2014). On the other hand, it seems that higher happiness (which can be determined by other factors than income) leads to less unethical behavior (Wang & Murnighan, 2014).

Another ethical concern around the motivation crowding effect is the idea of *'earning more by paying less'* (Bruni & Sugden, 2013). This is the idea that employers pay low wages to sort out the employees with high intrinsic motivation. In this way, knowledge of the motivation crowding concept can lead to exploitation, which is ethically objectionable. Furthermore, the crowding out of intrinsic motivation by extrinsic (especially monetary) incentives can lead to more self-interested people and inequality (Corporate Reform Collective, 2014).

These ethical papers characterize themselves by distancing more from neoclassical economics. They use the motivation crowding effect more as a criticism against the neoclassical principal-agent theories. The sudden interest for the ethical aspects of motivation crowding theory can probably be explained by the developments in economics following the global financial crisis. Generally, there was a growth of interest for more pluralistic ideas, among which ethical ideas that considered other interests than just the free market. More specifically, lessons drawn from the financial crisis called for a more general consideration of ethical issues in economics, because unethical behavior of individuals and organizations was one of the reasons for the financial crisis (Bini Smaghi, 2010). Another explanation is the growing interest for pluralism in economics which considers all kinds of other interests than just the free market (Heise, 2016).

4.7 Applications of motivation crowding theory in practice over the years

After the mathematical principal-agent models had become prevalent in economic theory, principal-agent theory also became visible in organizational and public policy practice. Prendergast (1999) noted that firms used different principal-agent mechanisms to incentivize employees, sometimes through pay-for-performance, sometimes by more subjective performance evaluation measures. However, it seemed undisputable that extrinsic incentives work to motivate employees (Prendergast, 1999, p. 55). From the little attention paid to motivation crowding in Prendergast's paper, it can be deducted that this issue was not really

considered by policymakers and incentive designers yet. Furthermore, from the case of performance pay in the Dutch education system (Dix, 2014), it becomes clear that the belief in the effectiveness of pay-for-performance was still high, at least until ten years ago. On the basis of the ideas principal-agent theory, the Netherlands Bureau for Economic Policy Analysis (CPB) proposed performance pay for teachers to increase the quality of education. Without a solid consideration of the downsides of such a performance-pay system (as motivation crowding out), it was made part of governmental policy in 2010.

Over the years, applications of motivation crowding theory have appeared more and more in different forms and situations. One old application of the ideas behind motivation crowding theory can be found in laws that forbid payments for organ donation. These laws rest on Titmuss' idea that people should donate organs because they are intrinsically motivated and that paying people to donate will undermine this intrinsic motivation (Epstein, 2008).

During the course of the development of motivation crowding theory, more and more applications of the theory came up. Examples of this can be found in voluntary public domain participation, as for example Wikipedia and the Peer to Patent project, in which experts voluntarily evaluate patent applications (Harvard Law Review, 2009). People contribute to these projects not because they receive extrinsic incentives, but because they feel empowered, they feel like they are part of a community, and thus they feel intrinsically motivated to contribute (Harvard Law Review, 2009).

As discussed before, the current turn from a welfare state to a participation society is also seen as a development driven by the motivation crowding effect (Heins, Fenger & Broekema, 2019). Because extrinsic incentives reduce people's intrinsic motivation, the idea of the Participation Society is to empower people to organise things for themselves and others. The Participation Society is shown by all kinds of voluntary citizen initiatives, for example local health cooperations.

Recently, the topic of intrinsic motivation and motivation crowding has received more attention in books and magazines oriented to organizational practice (Kuvaas et al., 2017).[36] Also, new ways of motivating people based on crowding theory are included in organizational trainings

[36] For examples of recommendations to motivate people in other ways than with extrinsic (monetary) incentives see Pink (2011) and Gerdeman (2019); for an opposite recommendation see Gerhart, Fang and Ledford (2013)).

(Agile Scrum Group, 2020). This shows that organizations are more and more using the insights of motivation crowding theory in their employee policies.

4.8 Conclusion

After the concept of motivation crowding was developed in cognitive evaluation theory, it was made part of economic theory by Frey. The efforts of Frey lead to economists of multiple economic subdisciplines being interested in the motivation crowding theory, starting around the turn of the millennium. Later on in the development of the motivation crowding effect, the theory also was applied more often in real life. A lot of these contributions and some practical applications have been discussed in this chapter. In the next chapter, all the different contributions and applications will be taken together to sketch the development of the motivation crowding concept as a whole from a bird's eye view.

Chapter 5 Conclusion

5.1 Bringing it all together: the development of motivation crowding theory from a bird's-eye view

From roughly 1970 until 1990, the period of neoclassicism and mathematical principal-agent modelling, the motivation crowding effect was developed by sociologists and (cognitive) psychologists. Their main contribution was that they established the underlying processes of the motivation crowding effect. In that time, the theory was rejected by most economists: neoclassical economists as Arrow, but also behavioral economists did not acknowledge the theory at first. Except from some discussions of the theory in organizational behavioral economics, the interest for motivation crowding theory seemed to be decreasing after the efforts of Deci and other cognitive psychologists. In practice, the belief in the effect of extrinsic incentives was high and motivation crowding theory was not considered as something to keep in mind.

While mathematical models dominated economics in the time cognitive evaluation theory came up, they lost more and more of their popularity over the years, which can explain why there was more room for motivation crowding theory to develop around 1990. Moreover, by that time experiments had gathered a more important status than 20 years earlier (Royal Swedish Academy of Sciences, 2002). This was also advantageous for the development of motivation crowding theory, because the main findings about motivation crowding theory came from experiments: around the time experimenting in economics was still in an early stage, cognitive psychologists were already using experiments frequently.

The stream of literature on motivation crowding theory started with the publications of the multidisciplinary economist Bruno Frey. It was only after his many papers and books about this theory that economists really started to gather interest for the theory. The papers of these neoclassical, behavioral and institutional economists added to the knowledge on the underlying systems of motivation crowding and mostly studied the conditions for motivation crowding. Over the years, more knowledge became available about the conditions under which extrinsic incentives crowd out or in intrinsic motivation. The main purpose of these studies was to help incentive designers to come up with the optimal incentive scheme (see for example Kyriacou, 2010).

Because most experiments found evidence for motivation crowding theory, economic science eventually accepted the theory more or less. This can be deduced from, for example, the turn of the economist Bowles who was sceptical at first but wrote a comprehensive paper on the processes of motivation crowding 14 years later. At the same time, the theory has become more complex because of all the different conditions, the sometimes contradicting evidence and the multiple alternative accounts that are given for motivation crowding theory. Therefore, overview papers like those of Bowles & Polania-Reyes (2012) are very useful to get a good understanding of the theory.

For a long time, the neoclassical, institutional and behavioral economists tried to converge their experimental results with the mathematical models. Motivation crowding theory was proposed as an addition to mainstream economic theory which fit into the rationality framework. Not only neoclassical economists tried to give the theory a place within their principal-agent models, but also behavioral and institutional economists like Frey stressed that motivation crowding theory should not be seen as a criticism against neoclassical economics. This perspective is inherent to the disciplines of behavioral and institutional economics, especially new institutional economics, because it is in the nature of these disciplines to try to merge their findings with the mainstream economic framework, in order to make mainstream economics more realistic.

However, one could also have another view on motivation crowding. After all, motivation crowding theory goes directly against the basic assumptions underlying incentive theory. Therefore, it can also be argued that it is not a matter of designing incentives in the right way, but that the whole theory of incentives itself is the problem. This view came up after the financial crisis, when papers were published about the theory in the field of ethics. These ethical papers characterize themselves by distancing more from neoclassical economics. They use the motivation crowding effect more as a theory to criticize the neoclassical principal-agent theories. Hence, in the latest stage of its development, motivation crowding theory is seen more as a theory that calls for more fundamental changes in economic policy. The voluntary citizen projects can be a good example of what these ethical contributions are calling for. Also considering the warnings that are given to managers about paying employees for their performance, it seems like motivation crowding theory is becoming more important.

Generally, the contributions of motivation crowding theory to economics can thus be understood in two ways. Firstly, it provides multiple additions and extensions to the principal-

agent models discussed in chapter 3. Hereby it makes incentive theory more realistic. The extensive search for conditions under which extrinsic incentives crowd out intrinsic motivation can be very useful. When they are included in mechanism design models, policy makers and incentive designers can use these new insights to foster the responses they want. In this way, using insights from motivation crowding theory might solve multiple problems that still existed in incentive theory, as for example the issue of free-riding and the issue of multiple tasks. This first way of understanding motivation crowding theory is prevalent in neoclassical, behavioral and institutional economics. Secondly, motivation crowding theory can also be understood as a theory that offers an alternative view on the core underlying assumptions of incentive theory. Especially the more ethical perspective asks if these assumptions are valid. Hence, the contribution that mostly the ethical perspective sees in motivation crowding theory is that it proposes a reason and directions for some more radical policy changes. An important note to make here is that this critical literature does most of the time not take into account that extrinsic incentives can not only crowd out, but can also crowd in intrinsic motivation, although motivation crowding out seems to happen more frequently.

5.2 Suggestions for future research

A final note on the development of the literature on motivation crowding is that in the past years, not much has been published about the theory anymore. Around 2012, some overview papers on motivation crowding were published and after that, the amount of literature on motivation crowding theory decreased. The reason for this cannot be a reduced interest in alternative approaches that challenge mainstream economics, since pluralism in economics has become more popular after the financial crisis. Rather, it seems like everything that could be said about motivation crowding has been said. I would like to challenge this stand, because there certainly are still topics in motivation crowding theory that need further research. Therefore, I will end this master's thesis with providing some ideas for future research in this field.

Firstly, new research methods could be applied to study motivation crowding theory. Motivation crowding theory has been studied extensively in (laboratory, field and neurological) experiments. Furthermore, new insights were gained by including motivation crowding in mathematical models and from quantitative analyses. However, research methods like case studies or ethnographic studies, which are also popular research methods in economics nowadays, have been applied less frequently to motivation crowding theory. I think it would be

useful to ask people themselves how they experience extrinsic incentives and what it does to their intrinsic motivation and to observe changes in their behavior in real life situations.

Secondly, a relationship that is underexplored in my opinion is the link between happiness and motivation crowding. The ideas in the field of happiness economics provide promising alternatives for economic policy. Job satisfaction has been established as an important determinant of people's happiness (Diener, Suh, Lucas & Smith, 1999, p. 293). Getting a good image of how and under what conditions extrinsic incentives might increase or decrease this job satisfaction should thus be of importance to happiness economists. However, few authors have studied this relationship. Green and Heywood (2008) found no evidence for motivation crowding out effects of extrinsic incentives on job satisfaction. However, their conclusion is based on one (quantitative) study. In my opinion, this relationship should be studied in more detail, using multiple research methods. I believe new insights gained from these studies could also contribute to the ethical perspective on motivation crowding theory, for example by weighing the benefits of extrinsic incentives against the potential cost of decreased job satisfaction.

Thirdly, some conditions for motivation crowding out or crowding in need more research. For example, the question if non-monetary incentives work better than monetary incentives has not received any clear answer yet in the literature. Some more definitive conclusions on this matter (which can also be different conclusions for different situations) could be of great relevance for incentive designers.

Finally, more research could be done to find solutions to the issue of motivation crowding out. More specifically, considering the problem of asymmetric information, researchers could try to find incentive mechanisms that, on the one hand, motivate people who are not intrinsically motivated yet, but on the other hand do not crowd out intrinsic motivation for others. One solution to this problem has already been proposed by Kritikos and Tan (2009), but more research in this area could possibly be of great practical use. However, considering the doubts about the underlying assumptions of mechanism design theory the question remains if such a 'perfect' incentive scheme does even exist.

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