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Essays in experimental economics

van Veldhuizen, R.R.

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Chapter 1

Introduction

As the title of this thesis suggests, this thesis is not unified by one overarching topic. Rather, the common theme of all chapters is their use of laboratory experiments. Laboratory experiments have been used in the sciences for many centuries to establish causal relationships between two or more variables. In economics, they have been adopted more recently but serve a similar purpose. In particular, they make it possible to establish causality by actively intervening in a controlled economic environment that has been created by researchers to test a specific hypothesis. Laboratory experiments are most appropriate if real world data are not available and cannot be generated using field experiments or if testing a particular hypothesis requires a level of control and cleanliness that cannot be achieved outside a laboratory setting.

Laboratory experiments can serve multiple roles, which are reflected in the different chapters of this thesis. Perhaps the first application of experimental economics was to test economic theories and see under which circumstances they are more (or less) likely to hold. I take a similar approach in chapter 2, in which I present an experimental test of a well known theory from resource economics. Experiments have also been used to test proposed economic institutions or policies. Chapter 3 uses this approach to investigate if increasing the wages of public officials decreases their corruptibility. Chapter 4 goes back to the approach of chapter 2 and takes a theory about willpower from a different discipline (psychology) and tests if this theory also applies in economic situations. Chapter 5 represents a newer approach in the literature. Rather than testing theories, institutions or policies, this chapter tries to replicate the results of a well-known empirical paper

that has been hard to replicate in the field.

In the remainder of this introduction, I give a brief summary of subsequent chapters. Each of these chapters were originally separate articles written either individually (chapter 3) or with different sets of coauthors (other chapters). The order of presentation is not thematic but chronological; chapter 2 was written first. A summary in Dutch can be found towards the end of this thesis.

1.1 Overview

Chapter 2 describes an experiment on nonrenewable resource markets. One of the most important theoretical findings in nonrenewable resource economics is that prices (or more accurately ‘scarcity rents’) should increase over time at the rate of interest. However, this finding -the so-called Hotelling rule- is not observed in practice. In real terms, resource prices have actually remained remarkably constant over time. Although many explanations for this empirical finding have been proposed, none of them have proven fully satisfactory. This encouraged Joep Sonnemans and myself to think about whether a laboratory experiment could present an alternative way to address this finding.

In this chapter we propose that resource owners follow the Hotelling rule when they have a relatively small amount of resources remaining. On the other hand, when resources are plentiful, resource owners deviate from the Hotelling rule as they focus on more immediate concerns. In the experiment, participants play the role of resource owners who have to allocate their resources over several time periods. Some have a small remaining stock of resources, whereas others have a large stock of resources available. We find that the former group on average follows the Hotelling rule almost perfectly, whereas the latter group extracts too many resources, in line with our predictions. Thus, we conclude that Hotelling’s theory is more likely to hold up in situations where resource owners have relatively few resources remaining.

In chapter 3, I investigate if increasing public officials’ wages decreases their corruptibility. Theory (starting with Becker and Stigler, 1974) suggests that increasing the wages of public officials should reduce their corruptibility. If this relationship holds, it provides governments with a policy instrument that falls directly under its control and would therefore be relatively easy to implement.

However, empirical evidence for this relationship has been hard to come by. Since corrupt activities are usually not incorporated into official accounts, direct measures of corruption are only rarely available. As a consequence, empirical studies have often been forced to rely on indirect measures of corruption. Additionally, even if more direct measures of corruption are available, establishing causality may still be problematic.

Laboratory experiments allow us to obtain a more direct measure of corruption as well as establish causality. This chapter presents the results of a laboratory experiment in which participants in the role of public officials either accept or reject a bribe and then decide between a neutral and a corrupt action. The corrupt action benefits the briber but poses a large negative externality on a charity. In the experiment, I exogenously vary public officials' wages and find that increasing public officials' wages reduces their corruptibility. In particular, it makes experienced public officials less likely to accept a bribe and reduces the number of corrupt actions as well.

Chapter 4 starts from a recent literature in social psychology that argues that exercising self-control requires willpower and that people's willpower should be regarded as a limited resource that can be temporarily depleted. In this chapter, Thomas de Haan and I use a laboratory experiment to investigate if depleting people's willpower increases their susceptibility to framing effects. Framing effects occur when people's decisions are affected by seemingly irrelevant aspects of decision problems. A well known example is the anchoring effect, which shows that presenting people with a random or unrelated number changes their subsequent estimate of the true value of a statistic. Typically, framing effects can be mitigated but the mitigation process makes use of higher order cognitive processes, which require willpower.

In the experiment, we first deplete participants' willpower and subsequently have them take part in a series of framing tasks, including a framed prisoner's dilemma, an attraction effect task, a compromise effect task and an anchoring task. We expected willpower depleted participants to be more susceptible to framing effects. However, we found no evidence that framing effects are indeed more prevalent in willpower depleted participants than in controls. This suggests that further research should investigate under what conditions the effect of willpower depletion on framing is likely to appear.

Finally, in chapter 5 Hessel Oosterbeek, Joep Sonnemans and I attempt to replicate the results of Mas and Moretti (2009) in the laboratory. In what has become a very influential study, Mas and Moretti (2009) show that cashiers are influenced by the productivity of those coworkers who can observe them during the production process (which is a peer effect). Many subsequent studies have assumed that the results of this study generalize to other contexts. Whether this assumption is warranted should ultimately be an empirical question, however. Replications in other settings could inform us on whether their results can indeed be extrapolated to other contexts. However, in practice such replications are difficult to do because of the level of detail required in the data. Hence, we use a laboratory experiment to approximate the key characteristics of Mas and Moretti (2009). To the extent that the findings of Mas and Moretti (2009) reflect fundamental aspects of human behavior that apply outside the original context, they should be replicable in a laboratory environment as well.

We designed the experiment specifically to capture the fundamental characteristics of the production process of Mas and Moretti (2009). Participants in the role of workers are members of teams and are not financially dependent on the effort of other workers but instead face a higher workload if their team members exert lower effort. Workers perform a real effort task, we vary worker observability and we obtain a direct measure of (permanent) productivity. In line with Mas and Moretti (2009), we expected workers to work harder when partnered with more productive coworkers who can observe them during the production process. However, we find that this result does not generalize to the laboratory. We find no evidence of peer effects despite finding that workers are well aware of the production and productivities of their coworkers when this information is available and have the ability to both increase and decrease their effort levels. This suggests that the findings of Mas and Moretti (2009) may not be as general as has been assumed.