

Matthias Rodemeier<sup>1</sup>, Andreas Löschel<sup>1</sup>, Roland Kube<sup>1</sup>  
<sup>1</sup>University of Münster, Germany

## Abstract

We investigate consumer inattention and imperfect information regarding the financial benefits of energy-efficient lighting using a randomized controlled trial with 1084 observations.

Results suggest that subjects generally know about cost savings of light-emitting diode (LED) bulbs – the central lighting technology of the future – but largely underestimate the magnitude of these savings.

Stated willingness-to-pay for an LED bulb increases on average by 2.53€ through the provision of information on expected lifetime costs. Additional evidence hints at further consumer misperceptions of attribute differences between lighting technologies.

## Introduction

Investments into energy-efficient household lighting ranks among the most efficient means to reduce residential energy costs (De Almeida et al., 2012). However, adoption rates of energy-efficient lighting remain low despite large financial returns to consumers.

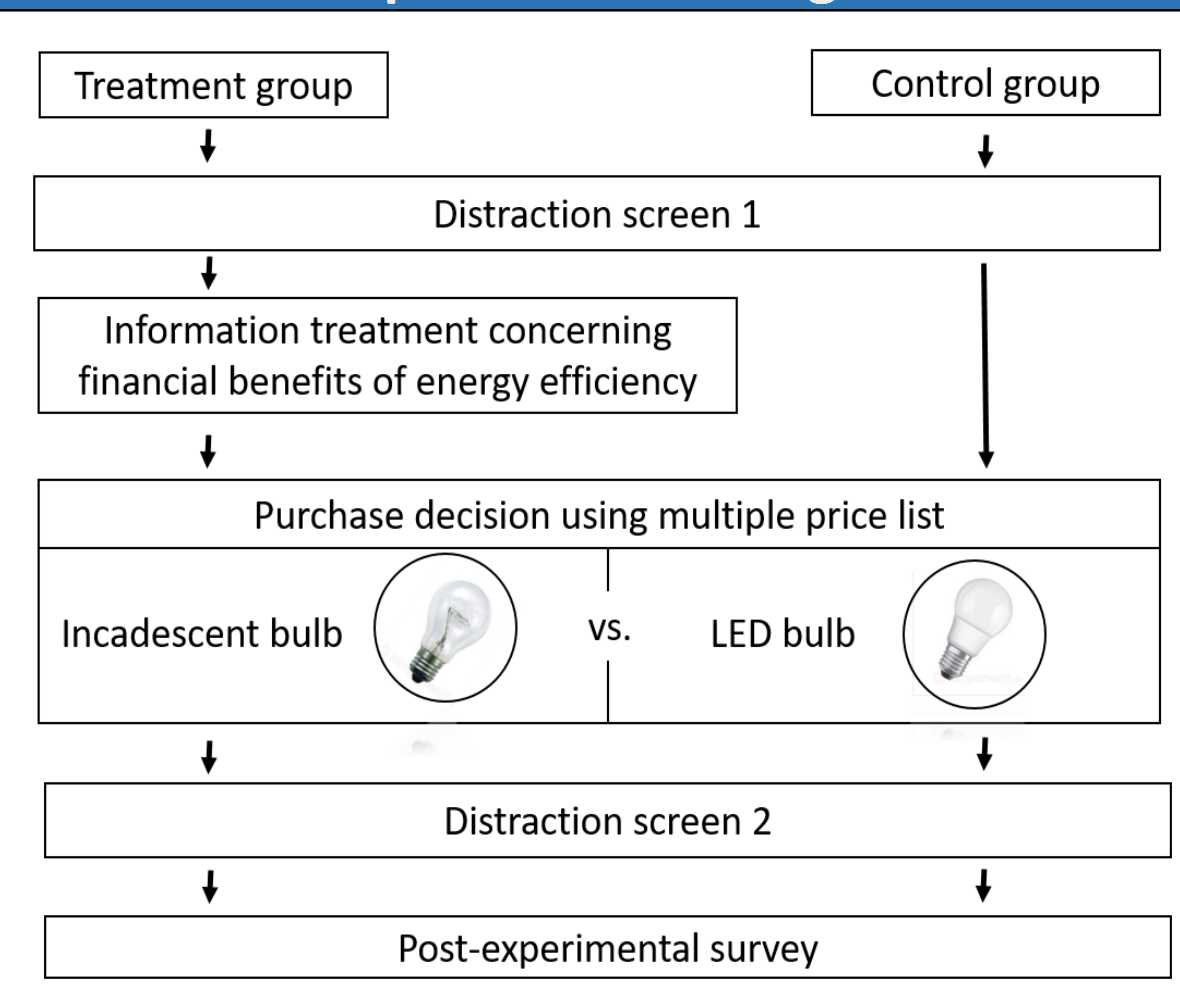
We investigate consumer inattention and imperfect information regarding the financial benefits of energy-efficient lighting using a randomized controlled trial with 1084 observations in Germany.

Our approach is (partially) a replication of an experiment by Allcott & Taubinsky (2015) who find that consumers in U.S. undervalue energy-efficient compact fluorescent bulbs (CFL) due to a lack of energy literacy and possibly inattention.

We use LEDs instead of CFLs as they save significantly more energy and are a closer substitute to traditional incandescents: they reach full brightness immediately and involve no (potentially health-damaging) mercury content.

Model on rational inattention (Sallee, 2014) predicts consumers to be less inattentive to energy efficiency when products are closer substitutes in other product dimensions.

## Experimental Design



## Main Results

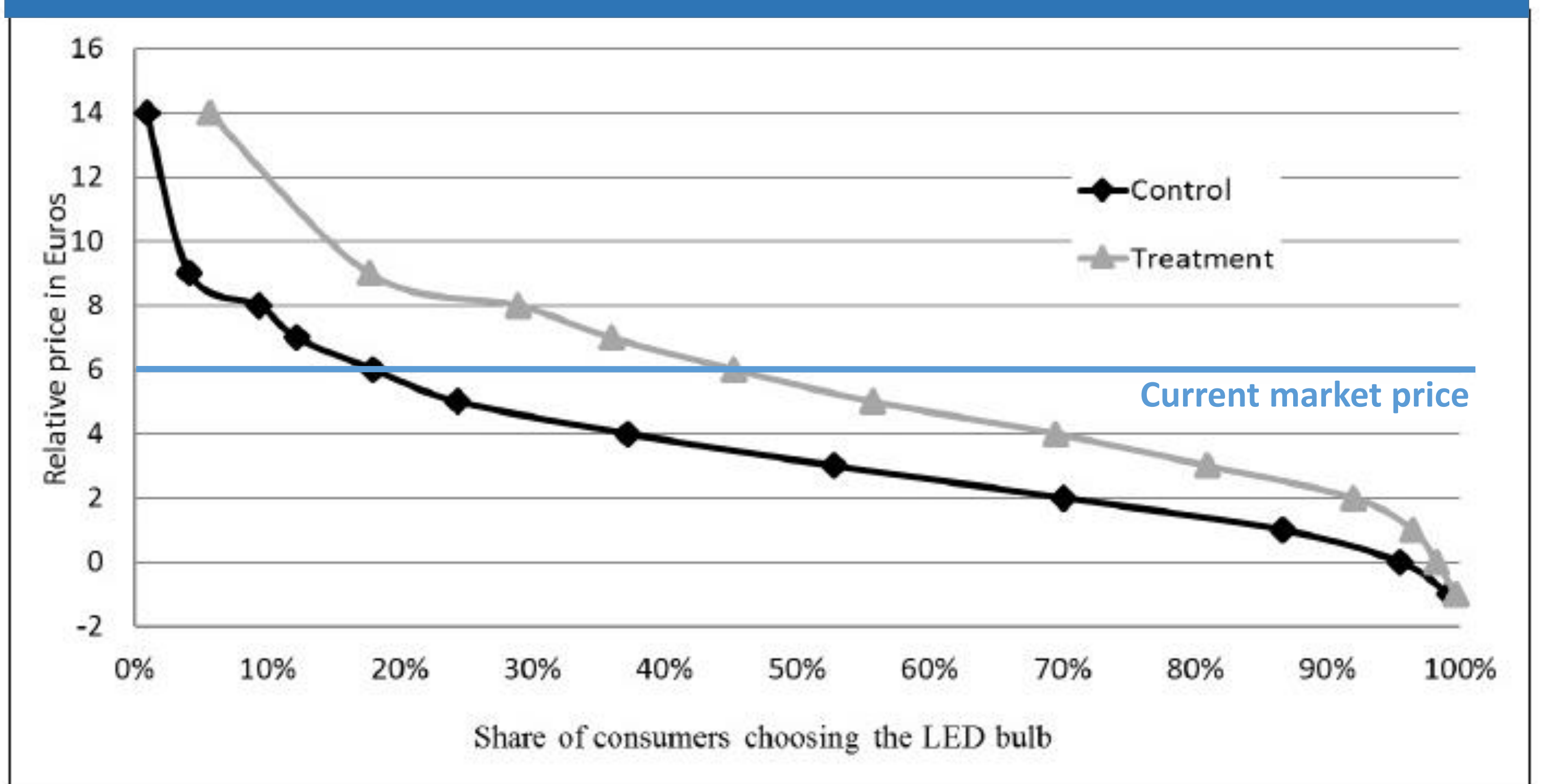
Willingness-to-pay for an LED bulb increases on average by 2.53€ (p<0.01) due to information treatment.

Treatment effect close to (incentive-compatible) estimates by Allcott & Taubinsky (2015) for U.S. market: 2.54 USD for a CFL bulb (≈2.02€)

Treatment significantly increases level of energy literacy among participants: more people in treatment group had accurate beliefs about savings potential of LED bulbs.

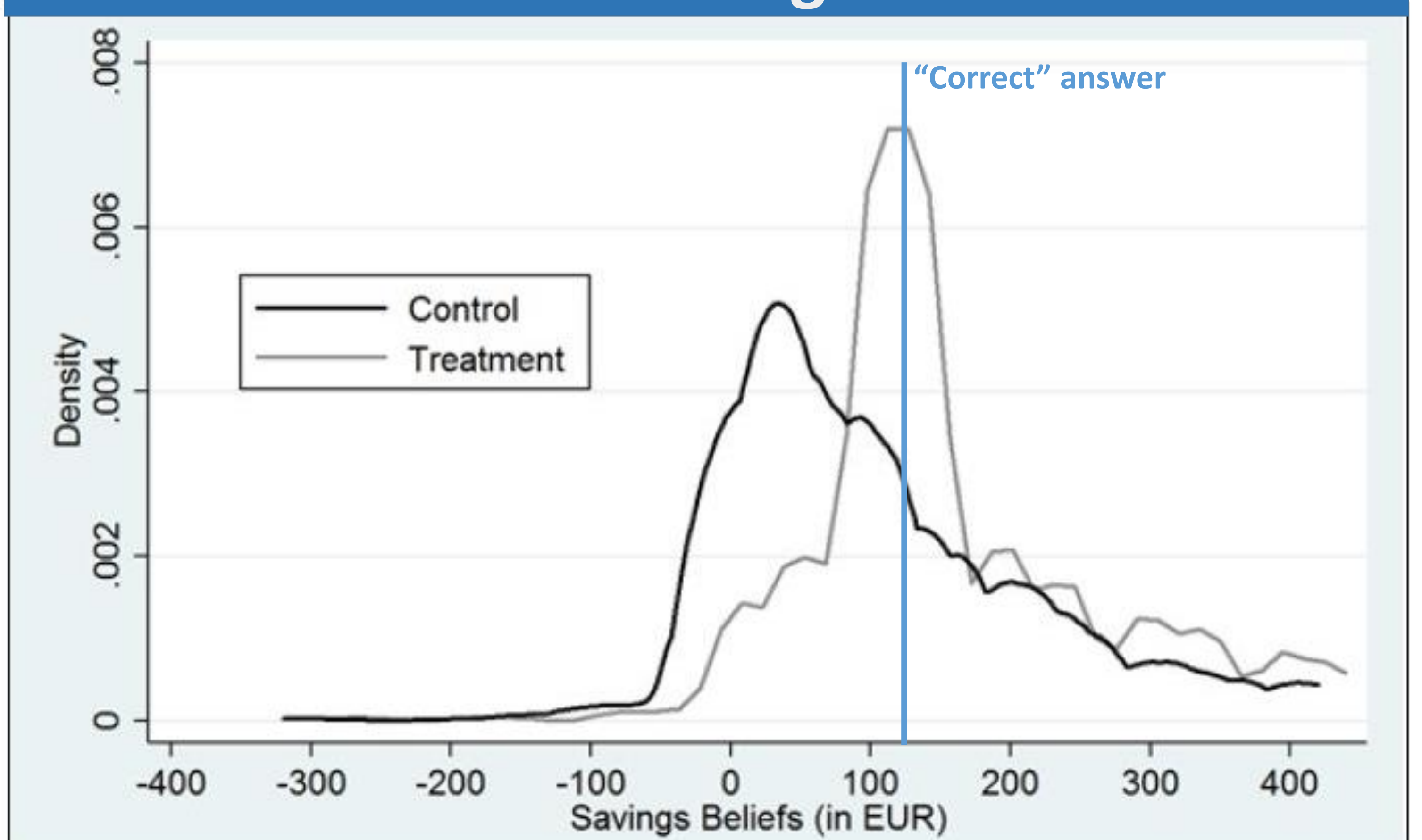
High discount rates are negatively correlated with WTP for an LED: increase of 10 percentage points is associated with decrease in WTP of 0.11€ (p<0.1). Moreover, consumers seem to falsely associate some negative attributes of CFLs with LEDs (e.g. long warm-up time).

## Effect on Demand



Notes: The relative price is defined as the price of the LED minus the price of the incandescent.

## Effect on Savings Beliefs



## Conclusions

Our work provides evidence for significant undervaluation of LED bulbs in Germany resulting from biased beliefs about the financial benefits of energy efficiency.

Additional results suggest that consumers with higher discount rates are more likely to favor incandescents and that the adoption of LEDs could further be affected by consumer misperceptions of other relevant attribute differences between lighting technologies.

## Contact

Matthias Rodemeier  
 Centre for Applied Economics Research  
 Chair of Microeconomics, University of Münster  
 rodemeier@wwu.de  
 Website: <https://www.wiwi.uni-muenster.de/ceres/en/>  
 Phone: +49 251 83 22978

## References

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