

Title: Do we discount time as we discount money?

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Long abstract:

In many situations, individuals make decisions that involve both time and money consequences. For instance, a company that starts the development of a new product will spend both money and time with the hope of getting future financial benefits. Similarly, a student that decides to pursue a university degree accepts to invest time in the short term in order to get a higher salary in the long term. People also have to decide on a daily basis between future time-allocation plans in their private and professional lives: “Do I prefer to do a task now or postpone it for the future?”. Behavioral research has studied extensively the psychology of intertemporal discounting of money. However, despite the fact that time is a scarce and valuable resource, very few studies have analyzed the way people discount time. In spite of the famous saying that “time is money”, there are several characteristics that differentiate time from money. For instance, time is less fungible than money: it cannot be easily transferred or substituted. Therefore, the way people discount time can be different from the way they discount money.

The goal of our paper is therefore to understand whether people discount the value of time as they discount the value of money. We investigate this issue using a laboratory experiment where consequences are measured in units of money or in units of time and real incentives are implemented in gains and losses of time. For the questions about time, we created a concrete scenario in order to facilitate subjects’ understanding of the concepts of gains and losses of time, and to give them a common reference point for time consequences. We also used this scenario for the implementation of real incentives. For the experiment we recruited 101 students from HEC Paris. Each experimental session lasted one hour on average and took the form of an individual computer-based interview.

We estimated all the components of the discounted utility model using maximum likelihood. Discounting was measured in both non-parametric and parametric ways. We took a descriptive perspective and allowed for discount rates to vary over time. We tested the most popular specifications of discount functions. We also measured utility of time and money in order to disentangle attitudes towards delays from attitudes towards outcomes.

Overall, analyses suggest that a sizable share of the subjects do not discount time consequences. At the same time, when time is discounted, we observe that the level of discount is stronger for time than for money. We also find evidence of stronger decreasing impatience for time than for money. Analyses of the discount factors estimated at an individual level show a large diversity of behaviors, especially for time outcomes. We estimated a latent class model in order to account for this heterogeneity of behaviors. The share of each class (“weak discounters” and “heavy discounters”) is similar for time and for money.

However, in the case of heavy discounters, discount rates are larger for time than for money.

We also analyzed the link between discount factors for time and for money at an individual level. Analyses show that there is a significant relationship between the level of discount of money and the level of discount of time. In other words, people who are impatient for money also tend to be impatient for time.

As a conclusion, we find that people do not discount time the same way they discount money. The paper also brings to light the complexity of time as compared with money and studies heterogeneity in discounting behaviors when outcomes are expressed in units of time.