# Betting Against Yourself for Weight-Loss

# A Theoretical and Experimental Investigation[*]

Rémi Yin[†]

29th October 2018

## Abstract

This article studies commitment devices as a potential tool to address weight-loss related time inconsistent behaviours. Using a theoretical model and an experimental study, I examine the demand for commitment device to achieve a specific goal when the difficulty of the goal is exogenously given. I present a discrete effort task model, wherein sophisticated quasi-hyperbolic individuals must exert a costly effort to increase their expected benefit in the future. In this setting, the individual has time inconsistent preferences on the optimal level of effort to exert if present-bias is sufficiently severe. she can use a commitment device whose difficulty of the objective (*i.e,* the level of benefit to reach) is given. By doing so, the commitment device serves as an external tool to motivate them to provide a high level of effort in the future. She decides the amount of money that would lose if they fail to reach the goal she is assigned to. The penalty to make her exert a high effort in the future must be infinitely large when goals are either too easy or too hard. The minimal penalty amount is when the changing in the level of effort has the highest influence on the goal success. However, there are limits to self-regulation since she opts out when goals are too hard *i.e.* when the likelihood of failure is high even if they exert a high effort. I also find that while higher present-bias increases the necessary penalty, the goal threshold for which opting-out occurs is lower. These theoretical results are robust to the addition of psychological mechanisms such as loss aversion and partial naiveté. This paper also presents an experimental study on weight-loss to illustrate the impact of the difficulty of the goal and of present-bias on commitment choices. Using experimental and psychometric methods to elicit time preferences, I find that higher impulsiveness and a higher consideration of immediate consequences are associated with commitment opting-out when goals are too difficult.

***Keywords:*** Time Preferences, Demand for Commitment, Obesity

***JEL Classification:*** C91, D91, I12