THE IMPACT OF COMMITMENT DEVICES ON BEHAVIOR RELATED DISEASES

MASTER'S THESIS PRESENTATION

M.A. International Economics & Business

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THE IMPACT OF COMMITMENT DEVICES ON BEHAVIOR RELATED DISEASES

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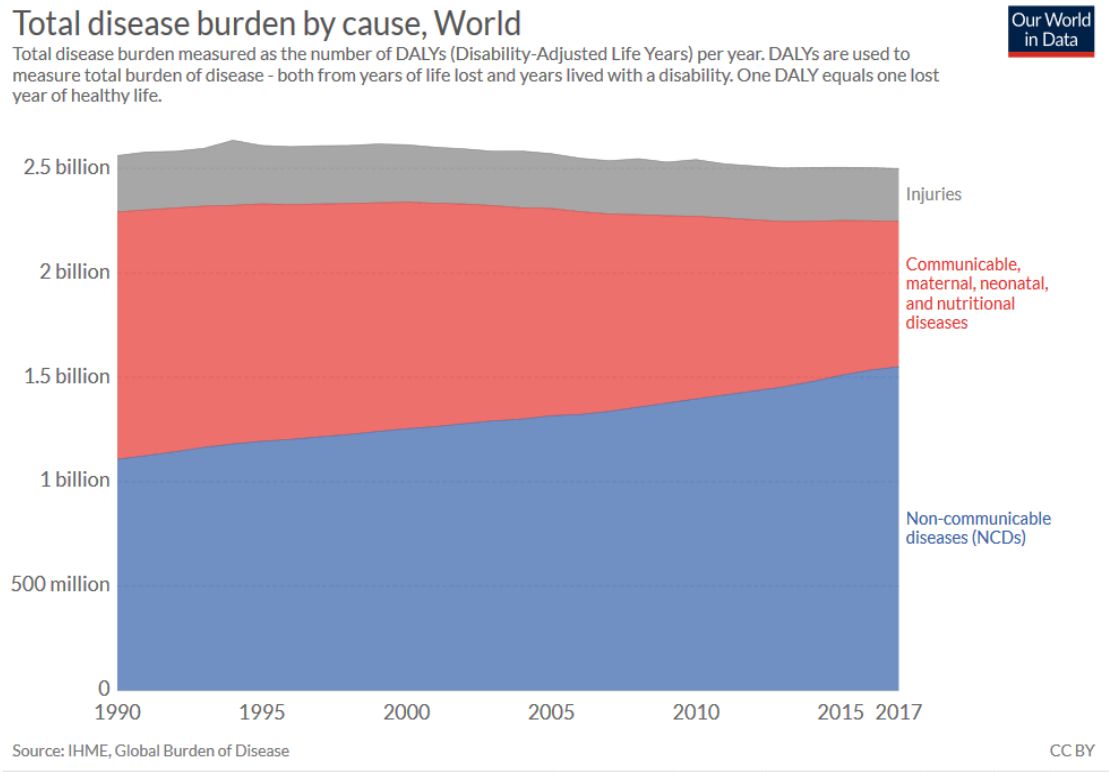
1. INTRODUCTION
Motivation

Sources: WHO (2018), AHIW (2016)



- **Motivation:** Rise of Noncommunicable diseases (NCDs) is a "choice" – because they are behavior related- and could be largely preventable!
- NCDs kill 41 million people each year (=71% of all deaths globally)
  - Cardiovascular diseases related deaths:17.9 million people/year
  - Cancers : 9.0 million/year
  - Respiratory diseases: 3.9million/year
  - Diabetes: 1.6 million/year
- **Individual behavior,** psychosocial and social determinants account **for 40-50%,** whereas genetics and environmental factors determine 30-40% **of personal health outcomes**
- ➢ **Key determinant** of NCDs deaths is the **individual's lifestyle**
  - Risk factors: tobacco use, physical inactivity, harmful use of alcohol and unhealthy diets
- ➢ Preference reversal of health choices in intertemporal settings:
  - ➢ Before dinner: Apple as dessert
  - ➢ After dinner: Chocolate as dessert

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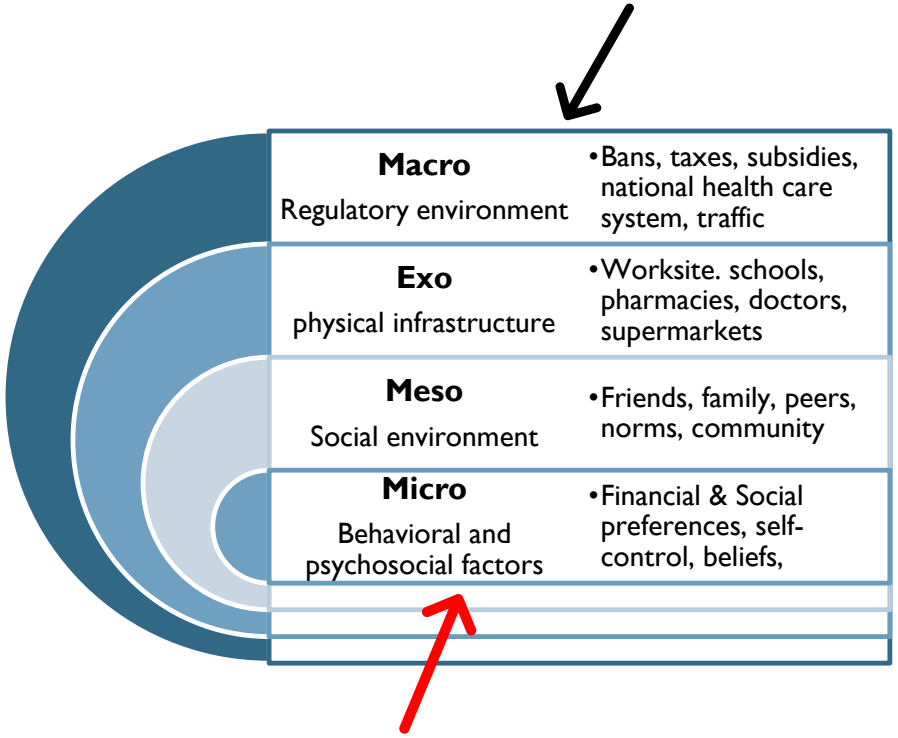
1. INTRODUCTION
MOTIVATION

- Prevailing surge of NCDs is not desirable from a public health perspective (health expenditures, loss of human capital, economic growth…)
- Existing policies (taxes, bans, information..) in place are not sufficient to put a halt on NCD deaths and focus on curing diseases, not prevention
- Among other fields, a **large part of behavioral economics describes ways people sometimes fail to behave in their own best interests**
  - USA, UK, Australia, Denmark already implemented BE tools in their public policy toolkit as they are regarded as a high-impact low-cost intervention in the background of "libertarian paternalism"

➢ Aim of behavioral interventions: tackle the problem at the beginning, i.e. at the individual level

Sources: WHO (2018), AIHW (2016), Psychology today



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2. UNDERSTANDING BEHAVIOR
2.3 Using commitment devices to shape choices

- Most people are aware of their lack of self-control (Sophisticates)

➢ Bryan et al. (2010) and Laibson (2015): **A self-commitment device:** is an **arrangement entered into by an agent who restricts his future choice set by making certain choices more expensive.**

  - 2 conditions: (a) voluntarily use
    (b) commitment devices associate consequences with people's failures to achieve their goals
  - Possible consequence: to loose deposits put at stake

- Kahneman and Tversky (1979) **Loss-aversion** as behavioral component:
  - Losses hurt more than gains feel good

➢ People fear to loose their stakes and therefore stick to their commitment

Source: Herbert James Draper: Ulysses and the Sirens, Wikipedia commons

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Evidence in other economic fields:

- Benartzi & Thaler (2004): designed an employer-based saving plan, Save More Tomorrow (SMarT), with the aim of increasing retirement savings
  - Outcome: take-up rate of 78% and a 1,5% increase in savings
  - High-cost effectiveness
- Breman (2009): increase charitable fundraising
- Ashraf et al. (2006b): SEED (Save, Earn, Enjoy Deposits) program to increase savings

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3. SELECTED EXPERIMENTAL STUDIES TO PROMOTE HEALTH CHOICES

3.1 Demand for commitment devices

Implications for demand for commitment devices:

		Giné et al. (2010): Put Money Where Your Butt Is: A Commitment Contract for Smoking Cessation	Royer et al (2015): Incentives, Commitments, and Habit Formation in Exercise: Evidence from a Field Experiment with Workers at a Fortune-500 Company
Take-up rate control group/ other treatment groups		99% - cue cards	93%- monetary incentive package for gym membership
Take-up rate of commitment device		**11%** -commitment deposit contract- similar high to other "self-help" treatments like nicotine plasters	**12%** of treatment group (after 4 weeks incentive period), but **23% among those who already exercise regularly**!
Main results: Behavior change	Control group	No evidence for behavior change	During incentive period increase in exercise frequency but fall back afterwards
	Treatment group	▪ **34% fulfilled the contract** ▪ ITT estimate: committers have a 3.5p.p higher propensity to be a non-smoker after 1 year	▪ **37% fulfilled the contract** ▪ Long-term effects: after 2 years participants still use the gym 4p.p. more often (+20% rel. to baseline)
Insights form regression of pre-study questionnaire on take-up rates		+ Optimism about quitting*** + wanting to quit at some point + Pre- existing strategic behavior - Likes smell of smoke*** ➢ Supportive evidence that sophisticates demand commitment devices	+ Prior exercise experience (+21p.p.)*** - Gender gradients: Male (-25 p.p)*** + Obesity (18 p.p)*** + Chance of hitting personal target: Overconfidence ➢ Supportive evidence

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3. SELECTED EXPERIMENTAL STUDIES TO PROMOTE HEALTH CHOICES

3.3 Contract Design

Contract Design			
		Halpern et al (2015): Randomized Trial of Four Financial- Incentive Programs for Smoking Cessation	**Goldhaber-Fiebert et al. (2015):Nudges In Exercise Commitment Contracts: A Randomized Trial**
Tool used for contract modification		▪ Group-based vs Individual approach ▪ Reward vs deposits	Defaults for contract duration
Take-up rate control group/ other treatment groups		▪ Individual reward: 95% ▪ Group collaborative reward: 85%	-
Take-up rate treatment group		▪ Individual deposit: 13% ▪ Group competitive deposit:15%	▪ 74%
Main results: Behavior change	**Control group**	▪ IV:35% quitters after 12m, relapse rate 50%	-
	Treatment group	▪ IV: 52% quitters after 12m, relapse rate 50% ▪ Quit rates were similar between group-based and individual approach!	▪ Longer duration defaults increased chosen duration of commitments, but did not alter choices of other contract characteristics (same stakes, same frequency) ▪ ToT: Those who did chose longer durations (>18 weeks) completed more weeks of exercising

➢ No statement possible which contract design is most promising to lead to a *sustainable behavior change*

➢ Further research has to be done to shed light on the trade-off between contract flexibility and commitment completion

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3. SELECTED EXPERIMENTAL STUDIES TO PROMOTE HEALTH CHOICES

3.3 Effectiveness

Cost- effectiveness

Smoking cessation		Exercising	
Giné et al (2010): Put Money Where Your Butt Is: A Commitment Contract for Smoking Cessation	Halpern et al (2015): Randomized Trial of Four Financial- Incentive Programs for Smoking Cessation	Royer et al (2015): Incentives, Commitments, and Habit Formation in Exercise: Evidence from a Field Experiment with Workers at a Fortune-500 Company	Goldhaber-Fiebert et al. (2015):Nudges In Exercise Commitment Contracts: A Randomized Trial
▪ **700 USD/ quitter** ▪ Benefit of not smoking per year 3400 USD	• At individual level: Usual care 122 USD, Reward 1,058 USD, Deposit: **542 USD** • Reward program is more expensive than commitment	▪ **58 USD/ employee** ▪ Increasing exercise from 0 to1, leads to less absence from work. 1 day not at work costs firm 160 USD → Program could pay for itself form a firm's perspective	No statement
➢ Low cost interventions compared to traditional policy tools			

3. SELECTED EXPERIMENTAL STUDIES TO PROMOTE HEALTH CHOICES

3.3 Effectiveness

Source: Bryan et al (2010)

Welfare:

Implicit assumption: if commitment devices are demanded, it is beneficial to provide them

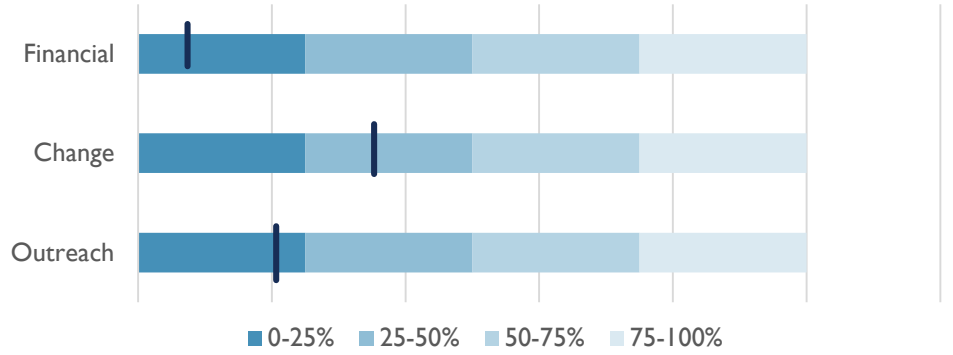
1. Take-up rates of commitment contracts depend on information available about future benefits of committed actions at that point in time (t=0)
   - Decision is beneficial if information about commitment outcome at t=0 is still correct at t=1
   - E.g. commitment to eat an apple instead of chocolate as dessert (made in t=0 grocery shopping), but at t=1 after eating the apple, person experiences a (before unknown) allergic reaction. False/missing information in t=0 leads to disutility at t=1 from using commitment device!

2. Underestimations of commitment costs:
   - Seize of commitment costs required for fulfilling the contract is higher than expected - Overconfidence about own abilities
   - ➢ Failure to comply is an inefficiency created by the commitment device
   - ➢ Height of these costs depend on background implemented in
   - ➢ Might be low in health, as long as users do not make even worse decisions after failing

4. CONCLUSION

Impact of Commitment Devices On Behavior Related Diseases

+ Commitment devices can help to facilitate or to initiate behavior change and overcome self-control problems
– However, there is **only mere evidence** that they lead to a **persistent change**
– **Take-up rates are low**, thus it is unlikely to reach large parts of the population
– Welfare effects are largely unknown (but indication that they are unlikely to negative)
– Long-term effects on health outcomes yet unknown
+ Even only small behavior changes are beneficial: every week people make better decisions will still benefit their long-term health (less smoking is still better than heavy smoking, the same holds for irregular exercising> no exercise)
+ **Low cost intervention**
+ **Could be used to complement other existing policies**



Can commitment devices already be implemented as policy tool?

No, because measuring awareness of time-inconsistency, and product design are insufficient examined for unpacking the mechanism how and when commitment devices work.

<u>Concerns for future research:</u>

- Demand for commitment devices to increase take-up rates and to understand welfare implications
- Insights for contract design to maximize impact

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Thank you for your attention!

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