DET ADFÆRDSØKONOMISKE PERSPEKTIV: NUDGING FOR ET BEDRE MILJØ

Oplæg til gymnasielærerdag på AAUBS

27. November 2024

BUSINESS SCHOOL
AALBORG UNIVERSITY

HVAD ER ADFÆRDSØKONOMI?

- Adfærdsøkonomi er et tværfagligt felt, der kombinerer økonomi og psykologi for at forstå og forudsige menneskelig adfærd i økonomiske beslutningssituationer.
- Det fokuserer på, hvordan mennesker træffer beslutninger, og hvordan deres adfærd kan påvirkes af forskellige faktorer.
- Traditionel økonomisk teori antager ofte, at mennesker handler rationelt og altid maksimerer deres egen nytte. Adfærdsøkonomi udfordrer denne antagelse ved at undersøge, hvordan psykologiske, sociale og kognitive faktorer påvirker vores beslutninger.
- For eksempel kan følelser, begrænset information og kognitive bias føre til irrationelle beslutninger.
- Adfærdsøkonomi anvender psykologi, evolutionær biologi og hjernevidenskab til at forklare vores adfærd.

EKSEMPLER PÅ BIAS

Figur 1: Oversigt over de adfærdsmønstre i behavioural economics, der er mest relevante for konkurrence- og forbrugerpolitikken

HVAD ER NUDGING?

- Nudging er videnskaben om, hvordan man aktivt kan benytte disse irrationelle faktorer til at påvirke menneskers adfærd.
- Mere specifikt handler nudging om, hvordan man systematisk arbejder på at udvikle, teste og implementere adfærdspåvirkninger der baserer sig på menneskets begrænsede rationalitet og de irrationelle faktorer, der påvirker os.
- En sådan påvirkning kaldes også et 'nudge'.
- Nudging handler om at hjælpe folk til at træffe bedre beslutninger og imødegå bias og irrationelle faktorer.

PRINCIPPER FOR GOD VALG-ARKITEKTUR

Principles	Brief description
i**N**centives	People respond to incentives like price and cost, but only if these are salient.
Understand mappings	People may need help understanding the mapping from the choices they may make to the outcomes they will get.
Defaults	Defaults matter a lot because of present bias and choice overload, so think carefully about them.
Give feedback	People do learn so give feedback on when things are going well or badly.
Expect error	People make mistakes, so we need something that is as forgiving as possible to mistakes they may make.
Structure complex choices	The more complex the choice the more problems a person has, and the more context effects will matter. Keep things simple.

PRINCIPPER FOR POLITISKE BESLUTNINGSTAGERE I UK

Principle	Description
Messenger	We are heavily influenced by who communicates information
Incentives	Our responses to incentives are shaped by predictable mental shortcuts, such as strongly avoiding losses.
Norms	We are strongly influenced by what others do.
Defaults	We 'go with the flow' of pre-set options.
Salience	Our attention is drawn to what is novel and seems relevant to us.
Priming	Our acts are often influenced by sub-conscious cues.
Affect	Our emotional associations can powerfully shape our actions.
Commitments	We seek to be consistent with our public promises, and reciprocate acts
Ego	We act in ways that make us feel better about ourselves.

NUDGE-VÆRKTØJER - EKSEMPLER

1.Default optioner: Sætte de gode løsninger op som standardvalg fx i forbindelse med pensionsopsparing.

2.Rammesætningseffekter: Rammesætning kan påvirke beslutninger. Fx kan fremhævning af fødevares sundhed øge forbruget.

3.Sociale normer: Fremhæve hvad andre gør kan tilskynde til lignende adfærd. Fx: forbrug strøm som din nabo eller gennemsnittet.

4.Simplificering: Ved at gøre processer lettere at forstå og navigere i, kan forbrugeren føres frem til bedre beslutninger. Fx bør offentlige myndigheder sørge for at simplificere beskrivelsen af serviceydelser og krav, for at borgerne kan udnytte disse mere effektivt.

NUDGING FOR ET BEDRE MILJØ

- Stigende erkendelse af, at de traditionelle politiske instrumenter til fremme af miljøet ikke slår til.
- Nudging kan gennemføres uden lovgivning og administrative omkostninger.
- Nudging sigter mod at ændre *valg-arkitekturen*, så den fremmer miljørigtig adfærd.
- Miljørigtig adfærd kan være svær at gennemskue for forbrugerne, ikke mindst fordi gevinsterne ofte ikke er her og nu. Derfor kan der være behov for at gøre beslutningerne lettere at træffe.
- Vores adfærd opdeles ofte i System 1 og System 2 beslutninger. Opgaven er at flytte den miljørigtige forbrugeradfærd til System 1.

HVOR KAN VI ANVENDE NUDGING?

- Opsparing
- Forbrugerbeskyttelse
- Folkesundhed
- Genbrug
- Skatteunddragelse
- Forøge bidrag til velgørenhed
- Arbejdsmarkedspolitik
- Virksomheder og bæredygtig adfærd
- M.m.

POLITISKE VÆRKTØJER TIL AT PÅVIRKE ADFÆRD

Table 1
Policy tools to influence individual behaviour based on (House of Lords, 2011).

Regulation of the individual	Fiscal measures directed at the individual		Non-regulatory and non-fiscal measures with relation to the individual				
Eliminate and restrict choice			*Guide and enable choice*				
	Incentives and information			Nudging			
Laws and regulations	Fiscal incentives	Non-fiscal incentives	Provision of information	Simplification and framing of information	Changes to physical environ-ment	Changes to the default policy	Use of social norms

NUDGING FOR ET BEDRE MILJØ – FØDEVARER

Table 3
Nudge mechanisms used to influence food consumption.

Nudge mechanisms used	Applications to food consumption	Evidence of effectiveness
Simplification and framing of information	Provide simplified information and signifiers	Small-scale studies in controlled environments indicate large impact; no large scale studies available; impact seems to vary for different segments of society
Changes to the physical environment	Change visibility and accessibility	Strong evidence in controlled environments (i.e. canteens; restaurants)
	Influence size	Experiments with portion size and package size suggest strong impact
Changes to the default option	Positioning of product choice	Wide use in retailing suggests large impact; few studies available for pro-sustainable nudging
Use of social norms	Provide information about others' behaviour and ideal-type behaviour	Studies suggest effectiveness, particularly when behaviour is publically visible and in cases of uncertainty about appropriate behaviour

NUDGING FOR ET BEDRE MILJØ – TRANSPORT

Table 4
Nudge mechanisms used to influence personal transport behaviour.

Nudge mechanisms used	Applications to mobility	Evidence of effectiveness
Simplification and framing of information	Decluttering streets, providing clear information, maps and changing framing to encourage cycling and walking, offering cycling training or personal travel plans, simplifying information on fuel consumption of cars	Average reduction of CO_2 emissions by 19% among ten travel feedback programmes and up to 35% in some cases Australian studies report 10% reduction of car use via personal travel plans[a]
Changes to the physical environment	Road and lane planning, urban design	Effective as infrastructural projects and systemic solutions
Changes to the default option	Auto-pilot decisions in cars, road planning, helmet wearing	Effective, e.g. dynamic speed limits that reduced speed driving from 70% to 17% in Linköping
Use of descriptive social norms	Travel or walking feedback programmes where social norms and social networks are involved Smartphone apps to encourage physical activity	Mixed evidence of effectiveness and low validity due to low sample size. In one study the app users increased their walking by 64% for a period of time

[a] Reduced car use is associated with increased use of public transport, walking and cycling Socialdata (2004). TravelSmart travel surveys, Socialdata Australia Pty Ltd. and Ker, I. (2004). "Household-based voluntary travel Behaviour change: aspirations, achievements and assessment." Transport Engineering in Australia **9**(2): 119–138.

KAN VI NUDGE LANDBRUGET TIL AT BRUGE KVÆLSTOFGØDNING MERE OPTIMALT FOR MILJØET?

1. **Excessive Nitrogen Use**:
   - Many farmers apply more nitrogen than necessary for maximizing profits. This over-application is often due to misconceptions about optimal fertilizer rates and the belief that higher rates mitigate production risks.
2. **Risk Perception**:
   - Contrary to farmers' beliefs, increasing nitrogen fertilizer rates does not reduce risk; in fact, it can increase variability in yields and profits. This misperception leads to continued over-application.
3. **Flat Payoff Functions**:
   - The relationship between fertilizer application rates and profit is relatively flat near the optimal rate. This means farmers can reduce fertilizer use without significantly impacting their profits, providing an opportunity for behavioral nudges.

BOX OG VIOLIN PLOT – KVÆLSTOFGØDNING OG PROFIT

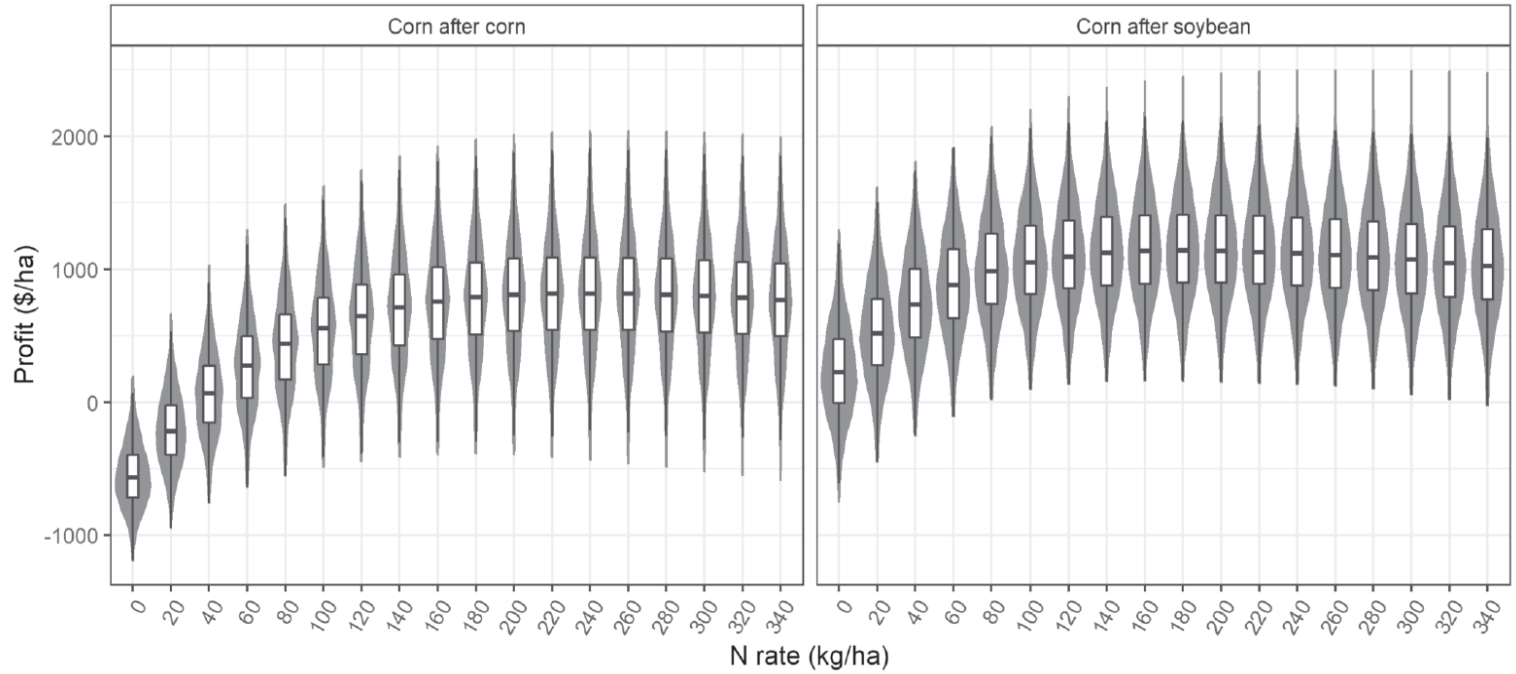

Fig. 1. Distribution of profits under different N fertilizer rates. Note: Two cropping systems are illustrated here: the continuous corn (CC) system (left panel) and soybean corn (SC) rotation system (right panel), using experimental site data from Puntel et al. (2016). For the box plot, the lower and upper hinges correspond to the first and third quartiles (the 25th and 75th percentiles) with the middle line corresponds to the median from the distribution of simulated profits under different N rates. The upper (lower) whiskers extend from the upper (lower) hinge to the largest (smallest) value no further than 1.5 times of the inter-quartile range (distance between the first and third quartiles). Outliers were omitted in this figure. The violin plots show the probability density of the profits at different N rates.

KAN VI 'NUDGE' LANDBRUGET TIL AT BRUGE KVÆLSTOFGØDNING MERE OPTIMALT FOR MILJØET?

Behavioral Science Insights

- **Correcting Misperceptions**: Providing accurate information about the economic benefits of reducing fertilizer use.
- **Framing Effects**: Presenting information in ways that highlight the benefits of lower nitrogen rates, such as improved water quality and potential cost savings.

Policy Implications

Integrating behavioral insights with existing agricultural policies could enhance their effectiveness. This includes:

- Developing targeted communication strategies that resonate with farmers' values and beliefs.
- Exploring insurance products that mitigate perceived risks associated with reducing fertilizer use.

Conclusion

By understanding farmers' behaviors and perceptions, policymakers can design more effective interventions to reduce nitrogen pollution, ultimately contributing to better water quality and sustainable agricultural practices.

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GRØN SOM STANDARD – "ERNERGIEWENDE" I TYSKLAND

- Et tysk studie undersøger om fastsættelse af grøn-el som et standard-valg kan bidrage til at et bedre miljø.
- Forbrugerne tilmeldes automatisk levering af grøn-el, selvom det i nogle tilfælde vil være et lidt dyrere valg.
- Forbrugerne kan 'opt-out' mod betaling af en afgift.
- Studiet anvender et stort datasæt fra German socio-Economic Panel kombineret med makrodata om de regionale energi-leverandører.
- Resultaterne viser, at regioner med en højere andel af opt-out afgifter har større efterspørgsel efter grøn energi.
- Grønne standardvalg 'nudger' forbrugerne effektivt mod bæredygtige energivalg.
- En række psykologiske bias kan forklare dette fx: status quo bias, tabsaversion og sociale normer.
- Grønne standarder kan således være et redskab til at øge anvendelsen af vedvarende energi.

Hovedresultat

Gennemsnit af 447 nudging-effekter fra 212 studier:

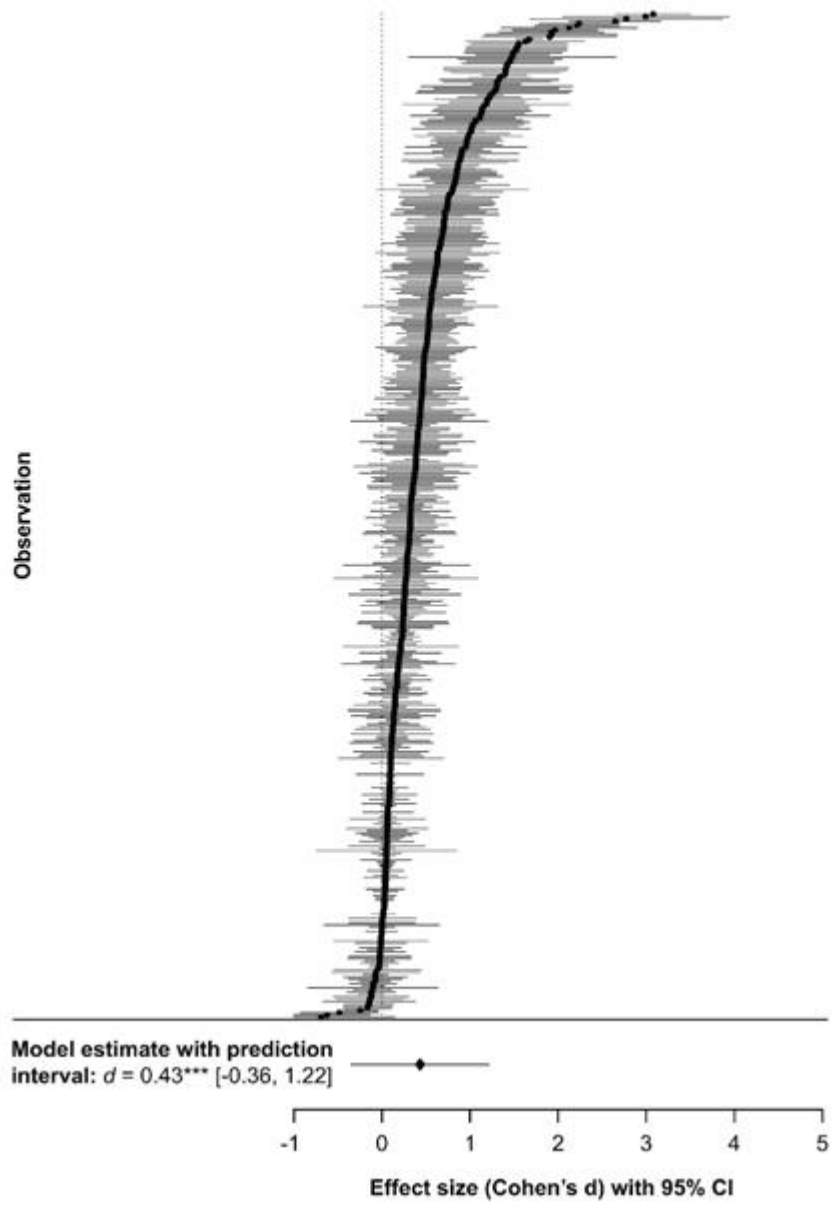
- Cohen's d = 0,43.
- Lille til medium effekt.

  Muligt positivt publikationsbias.

Cohen´s d effect size	Interpretation
d=.0–.19	Trivial effect
d=.20	Small effect
d=.50	Medium effect
d=.80 or higher	Large effect

De næste fire slides viser resultaterne fra de fire analyse punkter som Charlotte nævnte.

Plot af alle effektstørrelser



1. Effekten af forskellige **tiltag**

- Strukturering: *d = 0.54* (mest effektiv).
- Information: *d = 0.34*.
- Assistance: *d = 0.28*.

Cohen´s d effect size	Interpretation
d = .0 – .19	Trivial effect
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d = .50	Medium effect
d = .80 or higher	Large effect

Default som mest effektive metode:

- Default: *d = 0.62*
- Eks.: Organdonation (60%-point højere ved automatisk opt-in).
    - Undgår status quo bias - at folk vælger det letteste (ingen handling):

Fig. 4.

Intervention	*d*	95% CI
Decision information		
Translation[a]	0.28	[0.17, 0.39]
Visibility[b]	0.32	[0.25, 0.40]
Social reference[c]	0.36	[0.27, 0.46]
Average effect for category[g]	0.34	[0.27, 0.42]
Decision structure		
Default[a,b,c,d,e,f]	0.62	[0.52, 0.73]
Effort	0.48	[0.26, 0.70]
Composition	0.44	[0.25, 0.63]
Consequence[d]	0.38	[0.31, 0.46]
Average effect for category[g,h]	0.54	[0.46, 0.62]
Decision assistance		
Reminder[e]	0.29	[0.21, 0.37]
Commitment[f]	0.23	[0.08, 0.39]
Average effect for category[h]	0.28	[0.21, 0.35]

2. Effekten på forskellige **domæner**

Domæner:

- Sundhed, fødevarer, miljø, finans, prosocial, anden adfærd.

Effektivitet varierede:

- Fødevarer: **d = 0.65** (mest påvirkelig).
- Sundhed og miljø: **d = 0.34–0.43** (moderat påvirkelig).
- Finansiel adfærd: **d = 0.24** (mindst påvirkelig).
- Prosocial og anden adfærd: **d = 0.41 og 0.31**.

Fødevarer er altså 2,5 gange mere påvirkelig af nudging end finansiel adfærd.

Fig. 5.

Intervention	*d*	95% CI
Health		
Decision information	0.26	[0.09, 0.43]
Decision structure[a]	0.44	[0.29, 0.59]
Decision assistance[a]	0.20	[0.05, 0.35]
Average effect for domain[f]	0.34	[0.25, 0.43]
Food		
Decision information	0.44	[0.19, 0.70]
Decision structure[b]	0.78	[0.54, 1.01]
Decision assistance[b]	0.43	[0.28, 0.59]
Average effect for domain[f,g,h,i]	0.65	[0.47, 0.83]
Environment		
Decision information	0.40	[0.22, 0.58]
Decision structure[c]	0.52	[0.37, 0.68]
Decision assistance[c]	0.25	[0.06, 0.43]
Average effect for domain[g,i]	0.43	[0.33, 0.54]
Finance		
Decision information	0.23	[0.13, 0.33]
Decision structure	0.33	[0.20, 0.46]
Decision assistance	0.21	[0.10, 0.33]
Average effect for domain[h,i]	0.24	[0.14, 0.35]
Pro-social		
Decision information	0.37	[0.23, 0.50]
Decision structure[d]	0.48	[0.31, 0.66]
Decision assistance[d]	0.21	[0.13, 0.30]
Average effect for domain[i]	0.41	[0.27, 0.54]
Other		
Decision information	0.27	[0.20, 0.35]
Decision structure[e]	0.41	[0.16, 0.66]
Decision assistance[e]	0.20	[0.09, 0.31]
Average effect for domain	0.31	[0.09, 0.52]

-0.