Institutional Design and Human Motivation

Rational Choice Sociology: Theory and Empirical Applications
Seminar in Cooperation with Venice International University, San Servolo
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Institut für Soziologie

Theorie und Theoriegeschichte

1. Institutional design and homo economicus
2. Some problems of homo economicus
3. Why homo economicus assumptions are useful in institutional design
4. Conclusion

Institutional Design and Human Motivation

1. INSTITUTIONAL DESIGN AND HOMO ECONOMICUS

Institutions

- "Rules" which affect outcomes of various social interactions:

- "The same individuals, with the same motivations and capacities, will interact to generate quite different aggregate outcomes under differing sets of rules, with quite different implications for the well-being of every participant." (Brennan & Buchanan 1985, p. 4)

Designing institutions

- Institutions evolve spontaneously but also by conscious design

- Society as „constructed" environment (Coleman)

Coleman (1993, p.14): vision of sociology as a design science

- "What does this (...) mean for sociology and sociologists? It implies a future in the design of organizations, institutions, and social environments – design intended to optimize relevant outcomes. (...) It is the task of sociologist to aid in that construction, to bring to it the understanding of social processes, to ensure that this reconstruction of society is not naive, but sophisticated, to ensure, one might say, that it is indeed a rational reconstruction of society."

Three decision levels in designing institutions

1. Rational decisions with respect to the *criteria* institutions should fulfill
   - Maximizing „social welfare", „wealth"
   - Just redistribution etc.
   - Efficiency, profit maximization
2. Rational decisions with respect to choice of *specific* rules which are consistent with the criteria (constitutional choice)
3. Decisions with regard to choices within rules (subject area)

First order decisions

Harsanyi, Rawls

- Veil of ignorance

- Rationality
  - Harsanyi: Expected utility maximization
  - Rawls: Maximin

- Normative Criterion
  - Harsanyi: Rule utilitarianism
  - Rawls: difference principle

Buchanan

- Veil of uncertainty

- Rationality
  - Choice of model of man (third order decision level)
  - Expected utility
  - Quasi-risk aversion

- Normative Criterion: Outcomes of rules should be efficient (Pareto)

Third order decisions: Real actors under constraints of rules

Second order decisions: Rules

First order decisions: Desired outcomes (efficiency)

Buchanan doctrine
(3rd order decisions)

- *"Homo economicus,* the rational, self-oriented maximizer of contemporary economic theory, is, we believe, the appropriate model of human behavior for use in evaluating the workings of different institutional orders" (Brennan and Buchanan 1985)
- Why?
  - Homo economicus is not the most "realistic" model for all situations, however:
  - Uncertainty about properties (preferences) of agents
  - $\Rightarrow$ Quasi risk aversive choice among models of man
  - More "optimistic" models will create risks of societal losses greater than expected gains
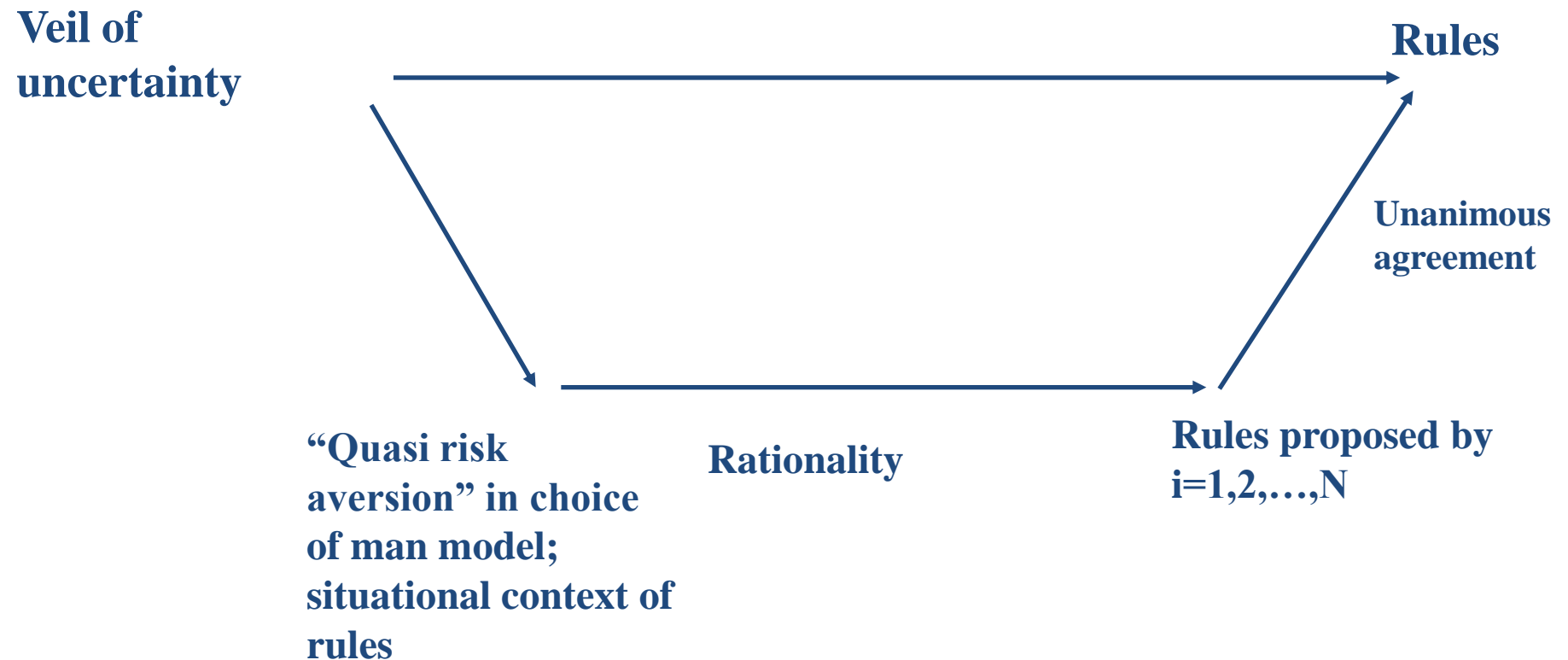
Arguments pro homo economicus: Crowding out effects

Gresham's law of politics:

„(…) when many persons are involved in a social interaction, the narrow pursuit of self-interest by a subset will induce all persons to behave similarly, simply in order to protect themselves against members of the subset".
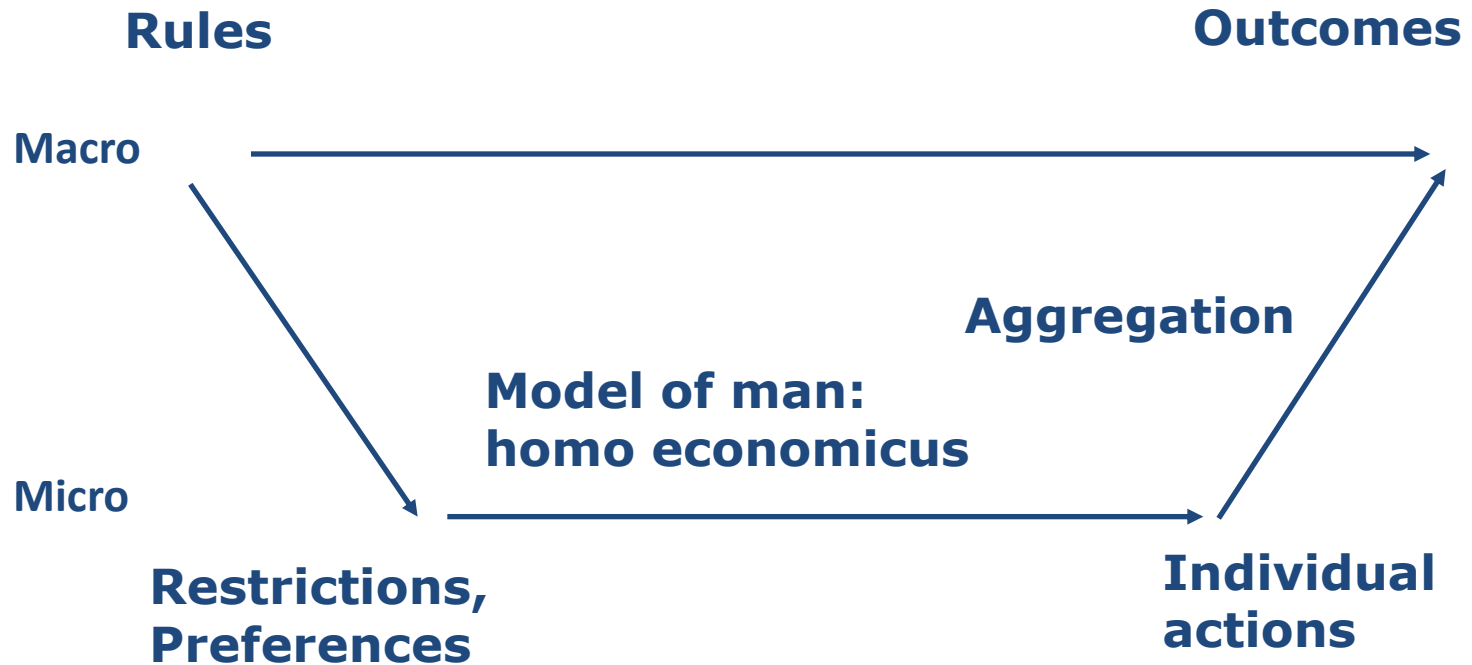
(Brennan & Buchanan 1985, p. 68)

First and second order decisions in T=0:
Constitutional choice of i=1,2,...,N individuals *among* rules (Buchanan)

Veil of uncertainty

Rules

Unanimous agreement

"Quasi risk aversion" in choice of man model; situational context of rules

Rationality

Rules proposed by i=1,2,...,N

Third order decisions in T=1,2,...: Anticipated decisions *within* rules (post-constitutional)

Rules

Outcomes

Macro

Micro

**Model of man:
homo economicus**

Aggregation

**Restrictions,
Preferences**

**Individual
actions**

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2. SOME PROBLEMS OF HOMO ECONOMICUS

Homo economicus

- Self-interested preferences
- Rationality

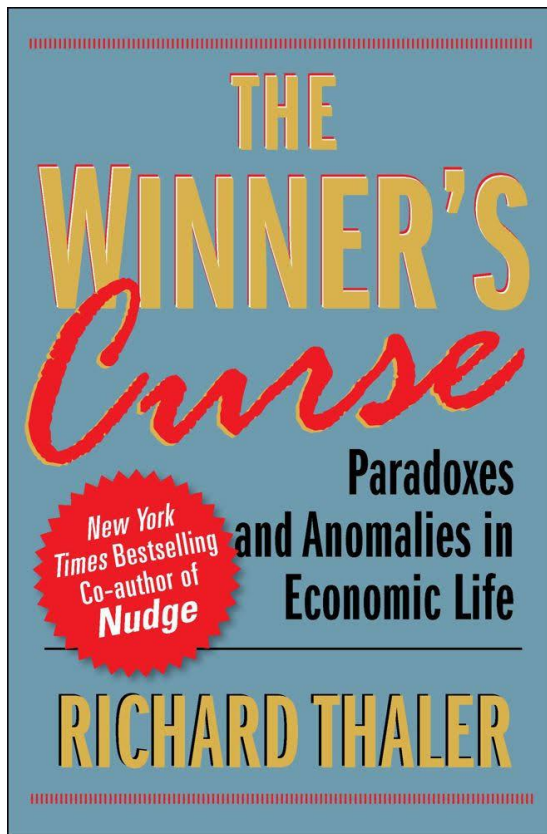N.B. Sociologists might instead talk about „rational egoism" model instead of „homo economicus"

Models of man

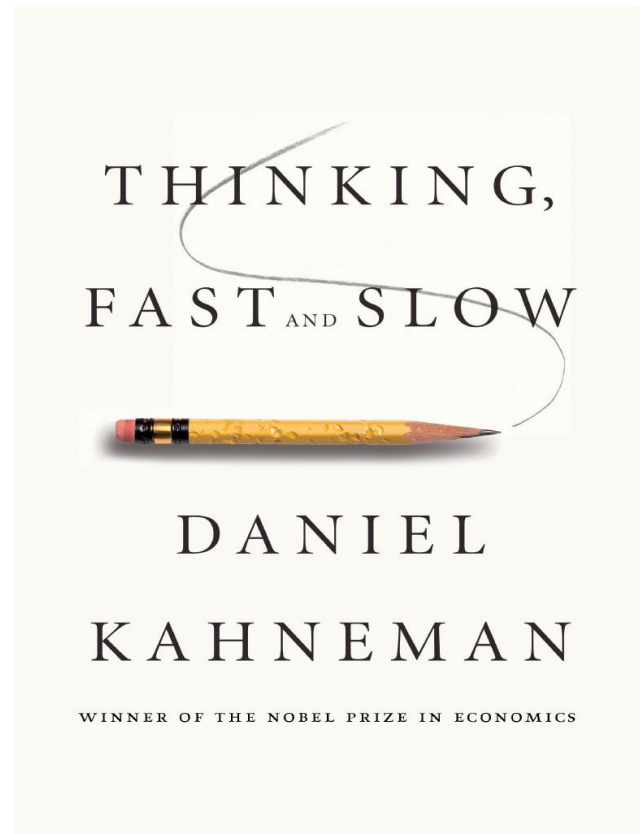|	Selfish motivation: • Self regarding • Outcome oriented	Non-selfish motivation
Completely rational: • Consistent preferences • Expected utility axioms • Common knowledge (CKR) • Backward induction	Homo economicus	Social preferences (e.g. inequity aversion) Strong reciprocity Intrinsic preferences Altruism Anti-social preferences
Boundedly rational: • Cognitive capacities limited: biases, heuristics • Preference reversals: time inconsistency, framing • Other choice anomalies	Dual self (Kahneman) • S1: heuristics • S2: conscious deliberation • Prospect theory	• Process regarding social preferences • Social rationality (Lindenberg) • Model of frame selection (MDF) (Esser, Kroneberg)

Voss: Institutional design and human motivation

Cognitive psychology
Behavioral economics

Anomalies

Prospect theory, Dual process models etc.

Liberal paternalism, „nudging", and institutional design

Richard H. Thaler
Cass R. Sunstein

Nudge

Improving Decisions About Health, Wealth, and Happiness
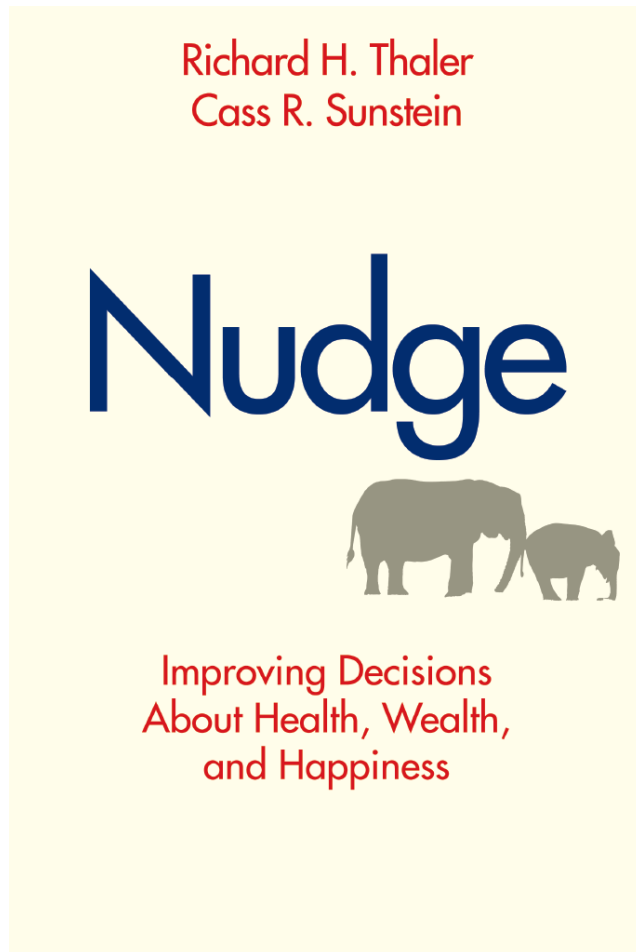
- Example: organ donation
- Two rules which would induce identical behavior of homo economicus: opt-in vs. presumed consent
- Countries with presumed consent show much higher proportions of donors (in accordance with behavioral theory)

Choice anomalies

- Systematic violations of rationality axioms:
  - Allais paradox: independence axiom violated
  - Reference point and framing effects: Asymmetric value function with respect to gains and losses
  - Endowment effect, sunk cost effect, opportunity costs vs. out-of-pocket costs
  - Etc.
- The homo economicus model is not the most pessimistic („worst case") model because anomalies can yield individually and/or collectively suboptimal outcomes
- ⇒ Rational agents will want to design institutions which cope with inefficiencies due to these anomalies

„Social" motives

- Examples
  - „Intrinsic" motivation vs. instrumental material incentives
  - Social preferences (e.g. fairness)
  - Strong reciprocity vs. instrumental reciprocity
- Designing institutions on the basis of homo economicus assumptions may destroy socially desirable effects of such preferences (if they exist)

Crowding out „good" motives by interventions

- Crowding *out* effects with respect to „intrinsic motivation" (Deci et al., Bruno Frey etc.): External interventions perceived as *controlling* can reduce intrinsic motivation and yield inferior outcomes

- Crowding *in* effects: In some cases intrinsic motivations may be fostered by interventions which are perceived as *supportive*

- Strong reciprocity can survive in a population of rational egoists if they can identify each other (R. Frank, and others)

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3. WHY HOMO ECONOMICUS ASSUMPTIONS ARE USEFUL IN INSTITUTIONAL DESIGN

Choice anomalies

- Individually and/or collectively suboptimal outcomes (e.g. sunk cost effect)

  – Homo economicus would be better off in terms of material outcomes than boundedly rational agents

- Evaluating the suboptimality of anomalous behavior is based on homo economicus model

- ⇒ normative evaluation of outcomes necessarily is based on homo economicus model

Intrinsic and social motivation

- Homo economicus: rules which change relative prices of alternatives are powerful („power of incentives")

- Crowding out-effects vs. incentive effects work in opposing directions: There is no clear evidence about the net effect

- Institutional domains where no intrinsic or social motives can be expected:

Institutional domains and situations

- Incentive pay; *no intrinsic motivation* (auto glass repair firm) (Lazear 2000): significant sorting and productivity rise effects due to piece-rate wage; no quality reduction due to incentive pay
- *Anonymous* markets (e.g. financial markets): automated high speed trading creates incentives for „sniping" and (criminal) „spoofing" ⇒ PD-like wasteful arms races to invest in even quicker connections to stock exchange places
  - Only interventions which change relative prices useful

Institutional domains and situations: „Asymmetric society"-thesis

- Profit-oriented *corporate actors* (Coleman): Motives to exploit anomalous consumer behavior (e.g. impulsiveness); consumer protection should not assume altruistic or pro-social motives by corporate actors [on the other hand: natural persons' behavior may be regulated by „nudging"]

Institutional domains and situations

- Environmental behavior in every day-decisions: Relative prices are relevant
  - Diekmann & Preisendörfer (1992 etc.): Low cost hypothesis
- Three stylized facts:
  1. Moral standards of pro-environmental behavior have a positive effect on behavior
  2. Costs of pro-environmental behavior negatively affect behavior
  3. Interaction effects: The positive effect of moral standards declines with increasing costs

Braun & Franzen 1995

UMWELTVERHALTEN UND RATIONALITÄT*

Norman Braun und Axel Franzen

Zusammenfassung: Nach einer Diskussion verschiedener Strategien zur Anwendung des Rational Choice Ansatzes ('Nutzenmessung versus Modellbildung') wird die Strategie der Modellbildung am Beispiel des kooperativen Umwelthandelns illustriert. Individuelles Umweltverhalten wird im Sinne von Beckers Markttheorie zur Analyse sozialer Interaktionen als Konsequenz des individuellen Interesses an sozialer Anerkennung modelliert. Neben einer Reihe von intuitiv plausiblen Effekten erlaubt das preistheoretische Modell die Ableitung der 'Low-Cost'-Hypothese von Diekmann und Preisendörfer, nach der sich bei steigenden Kosten des umweltgerechten Verhaltens der positive Effekt des Umweltbewußtseins auf das Ausmaß des Umwelthandelns abschwächt. Eine empirische Überprüfung bestätigt die untersuchten Modellfolgerungen.

Best & Kroneberg 2012

ABHANDLUNGEN

Kölner Zeitschrift für Soziologie und Sozialpsychologie

Die Low-Cost-Hypothese

Theoretische Grundlagen und empirische Implikationen

Henning Best · Clemens Kroneberg

Simple microeconomic explanation

- Basic idea: marginal decisions (environmental behavior is matter of degree vs. binary decision and „SEU"-analysis)
- Cobb-Douglas utility function
- Environmental behavior as a normal (composite) consumption good E with market prices p(E)
- Other goods with market prices p(X)
- Exponents α $(0<\alpha<1)$ measure relative interests which are allocated to E and X
- Constrained optimization gives individual demand functions

Econ 201 analysis of environmental behavior

E environmental good; X other good

p(E), p(X) prices of one unit of E and of X

m=Ep(E)+Xp(X) (budget constraint)

Cobb Douglas utility function
(α measures fraction of interest allocated to E.)

U=u(E,X)=$E^{\alpha}X^{1-\alpha}$

The demand functions for E and X are, respectively,

E=$\frac{\alpha m}{p(E)}$ and X=$\frac{(1-\alpha)m}{p(X)}$.

Now the three stylized facts follow:

(1) $\frac{\partial E}{\partial \alpha} = \frac{mp(E)}{p(E)^2} = \frac{m}{p(E)} > 0.$ (positive effect of α)

(2) $\frac{\partial E}{\partial p(E)} = \frac{-\alpha m}{p(E)^2} < 0.$ (relative price effect)

(3) $\frac{\partial \frac{m}{p(E)}}{\partial p(E)} = \frac{-m}{p(E)^2} < 0.$ (interaction effect)

Homo economicus effects

- Increasing relative prices of E decreases demand with respect to E

- The larger the fraction α allocated to E the higher the demand of E

- There is an interaction effect: the positive effect of α on E decreases with increases in the price p(E)

Aggregate behavior

- Aggregate behavior is an additive function of individual demand schedules

- *Aggregate demand functions are negatively inclined:* increasing costs of pro-environmental behavior reduce the demand (ceteris paribus)

- Conversely, decreasing costs (due to external interventions) increase the quantity demanded

Gary S. Becker (1962): Aggregate level price effects can be expected among irrational agents

- *i= 1,…,n* actors, two normal goods, with budget lines m_i
- Denote M as the sum of individual budget lines m_i
- Irrational agents choose impulsively (at random) a point on her budget lines
- Aggregate demand x for good x with price p is expected to be ½ M/p_x
- If the price increases, the demand will decrease:

$$\frac{\partial}{\partial x}\frac{M}{2\,p_x} < 0.$$

- "One of the core insights of economics is that relative prices (and scarcity) strongly influence behavior. One of the core insights of sociology is that the definition of the situation influences behavior." (Lindenberg 1990, p. 742).

Letter from the president of DGS (November 2005): membership fees increase from 60 to 150 € p.a.

Der Vorsitzende
Prof. Dr. Karl-Siegbert Rehberg

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Dresden, im November 2005

Erhöhung der Mitgliedsbeiträge der DGS

Sehr geehrtes Mitglied,

heute muss ich Ihnen mitteilen, dass das Konzil der DGS in seiner Sitzung am 28. Oktober d.J. die Mitgliedsbeiträge ab dem nächsten Jahr an die laufenden Ausgaben unserer Gesellschaft anpassen mußte.

Mitglieder, die ein Professorenamt innehaben, müssen statt € 60,00 künftig € 150,00 jährlich bezahlen (Wissenschaftliche Mitarbeiterinnen und Mitarbeiter oder in anderen Positionen tätige Mitglieder müssen künftig € 100,00 entrichten; arbeitssuchende Mitglieder bleiben bei € 30,00; Studierende bei € 20,00).

List of members who have chosen „exit" from DGS (largest number of exits ever) after price increase

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Prof. Dr. Hilde von Balluseck, Berlin
Prof. Dr. h.c. Detlef Baum, Mainz
Prof. Dr. Thomas Bierschenk, Mainz
Prof. Dr. Wolfgang Bisler, Osnabrück
Dr. Margret Blasche, Erlangen
Prof. Dr. Sabine Brombach, Beierstedt
Dr. Sílvio Marcus de Souza Correa, Brasilien
Prof. Dr. Hans-Ulrich Derlien, Bamberg
Prof. Dr. Rainer Dringenberg, Essen
Prof. Dr. Wolfgang Edelstein, Berlin
Prof. Dr. Michael Erler, Rüsselsheim
Prof. Dr. Thomas J. Feuerstein, Wiesbaden
Prof. Dr. Hans-Peter Frey, Bamberg
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Dipl.-Soz. Masha Gerding, Gelsenkirchen
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Alexander Milanés, M.A., Köln
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Prof. Dr. Klaus Türk, Wuppertal
Prof. Dr. Wolfgang Voges, Bassum
Prof. Dr. Dr. M.Sc. Heiko Waller, Lüneburg
Prof. Dr. Hansjörg Weitbrecht, Weinheim
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Not only sociologists but even Capuchin monkeys act like homo economicus
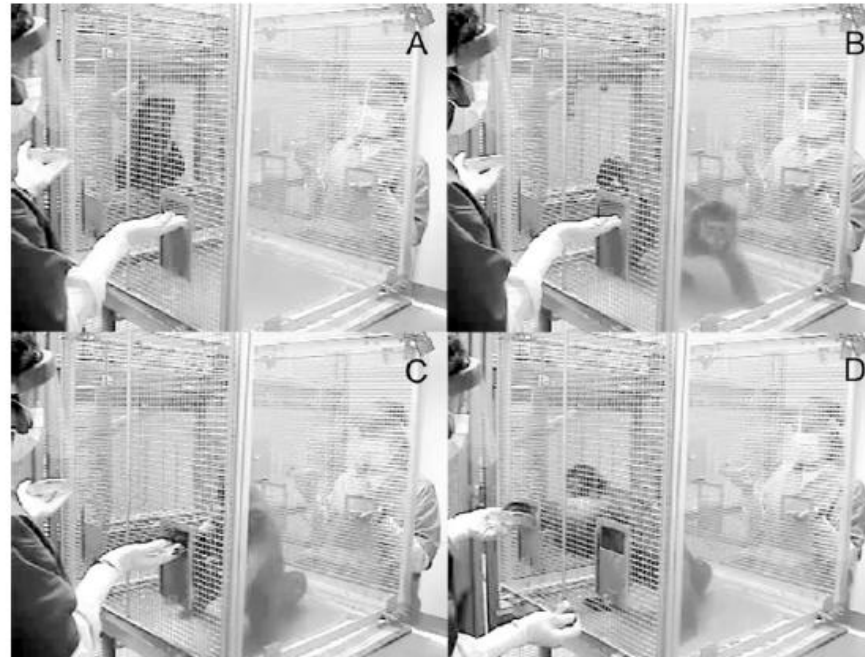

FIG. 1.—A capuchin must decide how to spend a budget of coins. The tray at the front of the testing chamber holds the monkey's budget, and each of the two experimenters displays in one hand a food reward in a small tray; his other hand is empty and outstretched. The subject enters the testing chamber (frame A), takes a token from the tray (frame B), places it in the hand of an experimenter (frame C), and receives a food reward from a tray in his other hand (frame D). The film clip from which these pictures are drawn is available from Chen on request.

Chen et al., *J. Pol. Econ.* 2006

How Basic Are Behavioral Biases? Evidence from Capuchin Monkey Trading Behavior

M. Keith Chen

Yale University and Cowles Foundation

Venkat Lakshminarayanan and Laurie R. Santos

Yale University

Monkeys' behavior is consistent with revealed preference approach (GARP) with negatively inclined demand functions
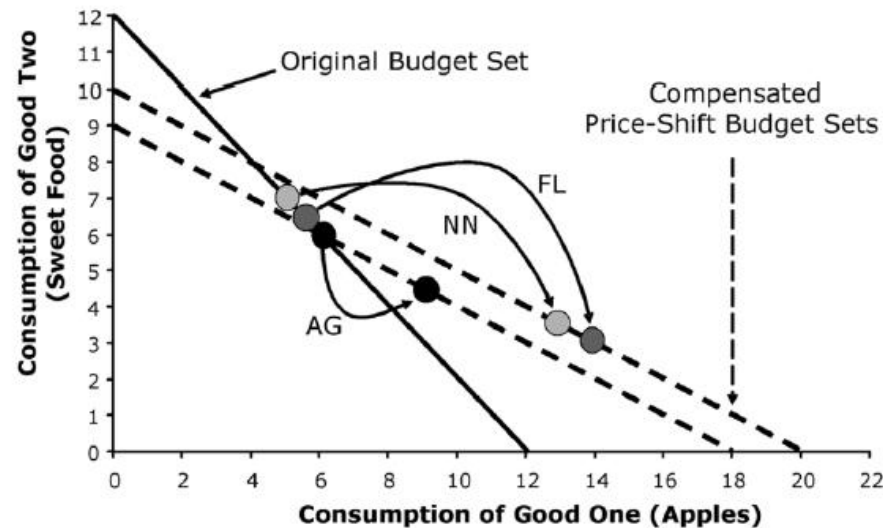

JOURNAL OF POLITICAL ECONOMY

FIG. 2.—Subjects' choices over baseline and compensated price shift regimes. Capuchins satisfy GARP; each shaded point represents the purchasing behavior of a single subject in either a baseline or compensated price shift condition. We represent their average choice behavior from the week after they had learned the trading regime and their choices stabilized.

- Sociologists, capuchin monkeys and other irrational agents predictably react on relative price changes
- The negative slope of the aggregate demand function does not depend on specific preferences
- Even when dealing with „irrational" agents the Homo economicus model is appropriate as an instrument to design institutional changes

Falk and Fischbacher (2005, p. 183)

- „In particular, for comparative static predictions of aggregate behavior, self-interest models may make empirically correct predictions because models with more complex motivational assumptions predict the same outcome*".

- * or nothing at all (added by T.V.)

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4. CONCLUSION: SOME PROPOSITIONS

Propositions

1. There is a large set of bounded rationality and non-selfish motive-models with partially contradictory predictions. It seems impossible to select *one* element from this set as a theoretical tool suitable for every problem of institutional design.

2. There clearly are institutional domains which require design principles consistent with homo economicus assumptions:

   – Competitive, anonymous markets (highspeed trading in financial markets), auctions

   – Profit-oriented corporate actors' behavior (in relations with natural persons)

   – Aggregate behavior in large groups of unconnected actors with high stakes

Propositions

3. In large-scale aggregate behavior it seems, in general, to be the case that homo economicus models and many more complicated alternative theories yield very similar, if not the same, predictions. In this case: Why not use standard homo economicus model?

4. Non-standard models are appropriate in special situations involving decisions at the margin, e.g. certain „low cost" situations. However, non-standard models offer no clear predictions about structural variables which affect outcomes of institutional design (e.g. repeated interactions, network effects) and must therefore be combined with standard models.

Propositions

5. Institutional design is, in general, a complex task with considerable uncertainty about its possible effects. Many, if not all, attempts of conscious design are prone to generate non-intended consequences. One should keep in mind that a trial-and-error process of „piecemeal-engineering" (Popper) – albeit guided by theoretical principles – is needed.

Two false propositions

1. Homo economicus represents the uniquely optimal model for institutional analysis.

2. Homo economicus is useless in institutional analysis

A note of caution

- "The policy of assigning all authority to a central agency to design rules is based on a false conception that there are only a few rules that need to be considered and that only experts know these options and can design optimal policies. Our empirical research strongly challenges this assumption. There are thousands of individual rules that can be used to manage resources. No one, including a scientifically trained professional staff, can do a complete analysis of any particular situation." Elinor Ostrom (2005, p. 269)

Thank you for your attention