

Report on Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Jan Šedek
Advisor:	Martin Gregor, Ph.D.
Title of the thesis:	Manipulating Verifiable Evidence

The thesis is an ambitious treatment in information economics which is one of the growing subfields of contemporary microeconomic theory. In essence, the thesis adds three kinds of reasonable restrictions on the feasible signal space into the optimal persuasion problem (c.f., Kamenica and Gentzkow, 2011, AER). It provides a few results on how to handle these restrictions if the state space is binary and also constructs some initial observations for the general case.

The thesis is novel in a sense that it not only borrows the convexity tools that are typically employed in the optimal persuasion problem, but it also uncovers the key link between the dimensionality of the signal space and dimensionality of the state space. In certain circumstances, the link helps to translate problems of functional analysis into tractable problems of maximization of a multivariate real function. The thesis is thus to a large extent devoted to the analysis of whether dimensionality of the signal space can be reduced in constraint maximization.

Chapter 2 is devoted to the unrestricted optimum to the optimal persuasion problem. After introducing the unrestricted optimum in Section 2.1 (basically by commenting a solution in Kamenica and Gentzkow 2011 in details), in Section 2.2 the author analyzes how to achieve the unrestricted optimum parsimoniously. The author demonstrates that in a state space with n -dimensionality, a signal with at most n realizations is sufficient for the sender to achieve the unrestricted optimum.

This is a nice technical problem which is fundamentally important for the analysis of the restricted optima. It shows that in the presence of constraints, a key property which must be addressed is whether by increasing dimensionality of the signal space, the constraints can be relaxed or not. If the constraints are not relaxed, then we may exploit the bounds on the sets of signals related to the dimensionality of the state space as in the original unrestricted problem.

Chapter 3 considers a first class of restrictions, namely restrictions on the maximal informativeness of signals measured by uncertainty measures such as entropy. The author provides an analytical solution of this “technical constraint” in the case of binary state space where only two signal realizations are employed.

Chapter 4 proposes a restriction on the maximal improvement of the information measured by uncertainty measures such as entropy. In this chapter, the difference to the “technical constraint” which employs an identical measure (see Chapter 3) is particularly interesting.

The author again seeks an analytical solution of the case of binary state space where only two signal realizations are employed. He shows why the general problem is difficult to handle and subsequently limits focus on a special case with binary actions. In addition, he discusses carefully generalizations to larger state spaces where he explains why comparison of the number of actions and number of states is the key for identifying the optimum.

Chapter 5 analyzes signals that must generate a minimal level of the receiver’s expected utility. I consider this constraint extremely interesting as it opens the door to the analysis about how the receiver trades her attention. To my knowledge, trade with attention is a very new topic in the literature where the author has a chance to directly contribute. Yet this analysis is possibly more difficult to generalize because of the need to consider only certain classes of the receiver’s utility. Specifically, the author considers a receiver who is risk-averse in his posteriors (her indirect utility function is convex in the posteriors).

The author shows that adding another signal realization for a risk-averse receiver may relax the constraint and therefore even the simplest problems (e.g., the binary state space) cannot be tracked by simple (binary) signals in general.

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The thesis contains a lot of material that after polishing has a fair chance to be published and attract attention in the field, especially given current large focus on the models of persuasion and also models of optimal reduction of uncertainty (e.g., rational attention). Notice that the optimal persuasion problem is currently a hot topic because Matthew Gentzkow became the 2014 John Bates Clark Medalist.

On the other hand, the wealth of the material calls for a lot of extra time to revise the results and polish the text. For example, the author calls a signal with n realizations to be the case of „ n signals“; I prefer the conventional label „a single signal with n realizations“ since a single should in my view represent a single random variable. Also, there are many typos in the thesis (e.g., p. 3, line 7: the two sentences should be separated by a comma and not a full stop; p. 41, line 11: „star“ should be replaced by „start“ etc.).

In spite of these minor qualifications, I consider this thesis to be an **excellent** Master thesis in economic theory and a very promising piece work.

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
<i>Literature</i> (max. 20 points)	19
<i>Methods</i> (max. 30 points)	30
<i>Contribution</i> (max. 30 points)	28
<i>Manuscript Form</i> (max. 20 points)	17
TOTAL POINTS (max. 100 points)	95
GRADE (1 – 2 – 3 – 4)	1

NAME OF THE REFEREE: Martin Gregor

DATE OF EVALUATION: June 1, 2015



Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

Strong Average Weak
20 10 0

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

Strong Average Weak
30 15 0

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

Strong Average Weak
30 15 0

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Strong Average Weak
20 10 0

Overall grading:

TOTAL POINTS	GRADE		
81 – 100	1	= excellent	= výborně
61 – 80	2	= good	= velmi dobře
41 – 60	3	= satisfactory	= dobře
0 – 40	4	= fail	= nedoporučuji k obhajobě