

Introducing economic classroom experiments to increase students' learning outcome

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Background

Economic experiments have become increasingly popular in recent years and many important economic theories and concepts have been tested in experiments (Kagel & Roth, 2016). This is also true for the field of agriculture, food and health economics, in which economic experiments have contributed substantially to progress the knowledge on consumer behavior (Roosen & Marette, 2011). Thus, experiments belong now to the standard canon of doing research in this field. According to my opinion, this should be also reflected in the way how we teach these topics to students. Based on the growing literature proving guidance on how to use economic experiments to increase students' learning outcomes (Balkenborg & Kaplan, 2009) and my own teaching and research focus, this project addresses how to introduce economic experiments into the classroom for a master level course on agricultural and food policy.

I have been involved in teaching this specific master level course for two years. Last year I prepared two different classes within the context of this course, one on healthy eating (food) policies and one on food safety regulations. Within the food safety regulation class I introduced several failures of rationality (also called bounded-rationality) and linked them to the discussion on determinants of different regulations and accepted technologies across countries. Since most findings on bounded-rationality are based on economic experiments, I presented several results from such experiments to the students.

Based on the thoughts pointed out above, I decided to go one step further and implement this year in-class economic experiments on these specific aspects and concepts in order to (hopefully) increase students' learning outcomes. For the specific course at hand I redesigned one class on *food safety regulations* and one on *market and welfare effects of labels and standards* by introducing classroom economic experiments which might be either carried out directly in the classroom or partially/fully in advance of attending the class (similar to a flipped classroom setting). Since I had the freedom to design these classes fully according to my vision, I implemented these experiments in combination with two other activation strategies, namely skim reading and group work using padlet.com. The latter two activation strategies I implemented last year for the first time and given the students' feedback I consider them as very useful and successful in activating students.

Details regarding the general course structure, students' background, how I redesigned the classes and student's feedback on the redesign on the class and my own reflection are presented in the following.

Course structure, students and learning outcome

The course "Agricultural and Food Policy" is part of the MSc Programmes in Agricultural Economics and Environmental and Natural Resource Economics offered by the Department of Food and Resource Economics. As central learning outcomes of this course are stated (i) to gain analytical skills needed to understand and conduct graduate level analysis on agricultural and food policy issues in OECD and non-OECD countries and (ii) to get familiar with key institutions, historical developments, current policy debates, and learn how to match certain economic analysis methods with practical problems. With regard to skills students should acquire while taking this specific course, it is further stated that students should be able to apply economic analysis methods with practical agricultural and food policy problems and present and communicate these both orally and in writing. The assessment is split into two parts: First, each student hands in a written essay to a food or agricultural policy case. The topic of this essay can be chosen by the students themselves. Second, at the end of the course a two-hour written examination is conducted.

Students in this course are relatively homogenous in that sense that mainly students with an economic background and interest in economic

concepts are attending this course. This has of course a large impact on the design of the specific classes regarding the depth of economic principles, concepts and methods introduced.

Redesign of three classes

Overall, I was teaching this year three classes under the common topic “labels and standards”. The first class focused on *food safety regulations and standards*, the second one on *market and welfare effects of standards* and the third one on *trade and development effects of standards*.

With regard to the first class and the topic of food safety regulations, I decided to focus on how to measure and derive willingness to pay (WTP) estimates for food safety regulations and how to determine a statistical value of life (SVL). These are central concepts in cost-benefit analyses of food safety regulations and understanding how to derive these measures are important learning goals.

With respect to market and welfare effects of labels I decided to focus on how to estimate the marginal WTP for labels under different information scenarios employing an experimental auction¹. This decision was driven by the fact that WTP estimates are an important feature of welfare analyses of labels and standards and there is a large literature employing experimental auctions to derive WTP for different value-added attributes in food. Thus, I concentrated on teaching experiments that are derived from existing research in the field, including my own one. Feedback on both experiments including the presentation of results and how to analyze the data generated was given in the third lecture I was in charge of.

WTP and QALYS – Experiment on valuing foodborne risks

Regarding the topic of food safety regulations I adopted and modified a survey which was used in a research project on valuing food safety in Sweden (Andersson, Hammitt, & Sundström, 2011). These authors estimated

¹ Experimental auctions aim at eliciting consumer valuations for new goods and services by creating an active market environment where participants bid real money on real goods. Thus, experimental auctions have advantages over other value eliciting methods since they are considered incentive-compatible, that is an exchange mechanism is used which creates incentives for people to think about what they will actually pay for the good or service (Lusk & Shogren, 2007).

the value consumers place on reducing the risk of foodborne illnesses by a contingent valuation method. Based on this approach it is possible to estimate the value of a statistical illness and to examine how WTP changes with changes in quality-adjusted life years. These concepts were introduced in that specific lecture theoretically and the survey was chosen to show how researchers determine these rather abstract concepts empirically. Each student received a link to the online survey and filled-out the survey during the lecture so that if something was unclear I could provide immediate feedback. Once the survey was filled-out by all students, we had an immediate feedback round on how the students experienced the survey, i.e. whether certain parts were hard to grasp or fill-out. Since all students had some experience with contingent valuation methods from another course taught at IFRO, they gave very valuable feedback concerning the structure of the survey and potential ways to improve it showing their ability to transfer the knowledge from other classes to this one.

WTP for labels – Experimental auctions in the classroom

In order to derive market and welfare effects of labels, consumer valuations of different product attributes are an important input and thus there is a large literature on WTP for labels. Again as in the case before, the chosen experiment (experimental auctions) was chosen in order to give students the opportunity to actively learn how in empirical research WTP estimates are derived. More specifically, I designed an experimental auction (Vickrey 2nd price sealed bid auction) employing chocolate (100g) with different labels under three different information scenarios. Via different information scenarios it is possible to investigate the impact of information on the marginal WTP for labels. This set-up was based on my own research in the field of consumer economics (Teuber, Dolgoplova, & Nordström, 2016). The auction was set-up in a way that the students submitted their bids electronically via a survey link², while real chocolate with different labels was presented in the classroom.

Presentation/Analysis of results

In the third class I presented the results from the two experiments conducted in the two previous classes and discussed with the students about ways to analyze the data and how to interpret the generated results.

² For both surveys I used the SurveyXact software.

Student's Feedback and Learning Outcomes

I posed feedback questions directly in the lecture to the students once they had filled-out the survey or participated in the auction. Moreover, at the end of the survey students could place additional comments. The immediate feedback was quite positive and critical comments how to improve the survey design showed me that some students did not only fill-out the survey but critically evaluated the survey design and applied the knowledge from the theoretical part of the lecture and other course taken on similar topics to this specific case. This knowledge transfer is of course very positive.

I consider this immediate critical feedback in combination with the answers students gave in the written exam to an exercise addressing a cost-benefit analysis of stricter food safety regulation standards as two qualitative indicators of a positive outcome of the implementation of these in-class experiments³. Furthermore, the rather positive students' evaluations of the overall course and my part of teaching (see Appendix A) might further serve as a proxy for "having done a good job as a teacher" which hopefully resulted in a good learning environment fostering a good learning outcome.

Own Reflection

Looking back on the experience with setting up the experiments for this specific course some points are noteworthy. Overall, I am very satisfied how smooth the implementation of the experiments in class went and also how well the students took part in it. Since new teaching strategies always bear the risk to not work out how they are supposed to work, I consider this already a positive outcome.

However, there is always room for improvement. First, my initial idea was to let the students analyze the survey/auctions results themselves. Unfortunately, due to time and capacity restrictions (the students were already busy with their essay and I had some problems in programming the survey in a way that the students could immediately access the data) I could not implement the experiments this year in this way. Thus, involving the students in the analysis of the data they generated would be my goal for

³ The optimal case would be, of course, to have a reference or control group in order to evaluate the impact on the learning outcome in a quantitative way. However, given that such an approach was not feasible "softer" indicators of improvement in learning outcome need to be looked at.

the next year. Second, given the feedback by some students I would reconsider to send the link to the survey in advance and let them fill-in the survey before the class. Thus, time in class could be spent on data analysis and interpretation by the students themselves.

Nevertheless, since one of the stated learning goals of this specific course is to gain and apply analytical skills to real-world food and agricultural policy problems, I think that the implementation of the above described economic experiments contribute to achieve this important course goal.

References

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- Roosen, J. & Marette, S. (2011). Making the ‘right’ choice based on experiments: regulatory decisions for food and health. *European review of agricultural economics*, 38(3), 361–381.
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A Appendix

Results for Agricultural and Food Policy B4-4F17 - Block 4, 2016/2017

1

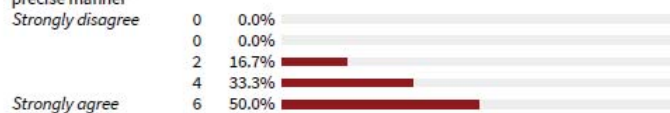
B Teacher evaluation (Ramona Teuber)

You can fill out the evaluation below. If there are questions that are not relevant to you, you can choose not to answer those.

37 could answer this evaluation schema.
12 have answered this evaluation schema.
The answer percentage is 32.43% : 12 / 37

1

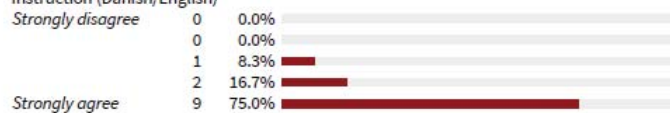
1.1 In my opinion, the lecturer was good at communicating the course content in a clear and precise manner



1.2 In my opinion, the lecturer took an interest in the students' learning outcome from the course



1.3 In my opinion, the lecturer was good at expressing him/herself clearly in the language of instruction (Danish/English)



1.4 Additional comments:

- *I wish less time was spent during the class to fill out surveys. Maybe we could do this before class starts.*