

Classroom Experiments



Learning by doing

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How Do They Work?



- Best way to find out is to play one!
- Students are asked to make decisions in an artificial/controlled environment which incorporate certain incentive structures
- Decisions determine hypothetical pay-offs
 - Individual choice vs. Interactive choice games
- Usually last 20 – 40 minutes
- Can be either paper based or Online
- The games generate data for analysis and discussion

Game 1: A market game - Background



- One of the first classroom experiments (Chamberlin 1948)
- Referring to this game Holt(1996) stated that it:
 - “would be my clear first choice if I were limited to a single lecture in a microeconomics course at any level”
- Induced value approach with a number of rounds
- I use it in induction week and post data on the VLE.

Game 1: A market game



- Students divided into buyers and sellers
- Students given cards
 - Red for sellers of the item
 - Number on card gives cost of item in £s
 - Want to sell *above* value of card
 - Black for buyers of the item
 - Number on card gives value of item in £s
 - Want to buy *below* value of card
- Trading takes place
 - Individual buyers and sellers agree prices
 - trading pit/offer, counteroffer and haggling
 - Mark their gain on their sheet
 - No deal gives no gain or loss

Game 1: Reflections



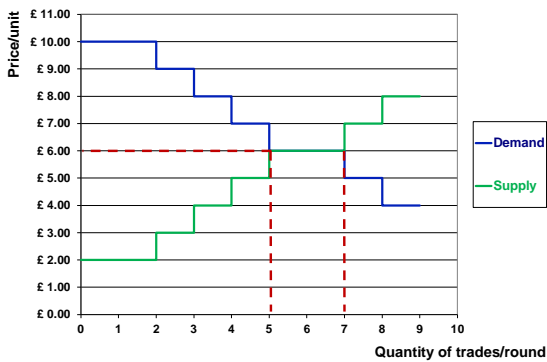
- Prices normally converge to competitive equilibrium
- Price convergence tends to be slower and variance of prices is greater than oral double auction
- However pedagogic advantages
- Sometimes negotiating ability of one side of the market is much better
 - Normally buyers

Game 1: Reflections

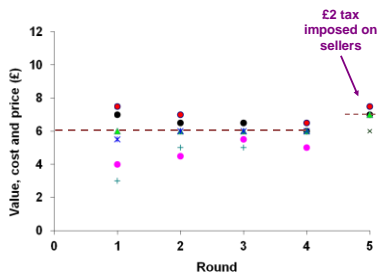


- Easy to demonstrate producer and consumer surplus
- Helps introduce the concept of efficiency
- Can discuss information issues
- Useful for illustrating the impact of government intervention
 - Tax/maximum price etc
- Can be played online

The Market – 18 player game



An 18 player game



One we tried earlier

Potential Benefits



www.economicnetwork.ac.uk

- Fun/engaging
- Evidence that they have a positive impact on learning
 - Emerson and Taylor, 2004; Dickie, 2006; Ball et al, 2006; Durham et al 2007
 - Taking part vs. Demonstration (observing the behaviour of a few volunteers)
 - Repeated decision making
- Potential way of dealing with heterogeneity

Potential Benefits



- Promote a more active learning environment and help achieve deeper learning
- “Student activity does not itself imply that learning will take place” Ramsden 2003
- “It is not enough just to do, and neither is it enough just to think. Nor is it enough simply to do and think. Learning from experience must involve linking the doing and the thinking” Gibbs 1988
- Important that they are fully integrated into the teaching programme

Overcoming Potential Drawbacks



- Could have implications for the quantity of material “covered”
 - On-going debate: quantity vs. quality
- Demands on the lecturer - helpers
- Will students take them seriously?
 - Linking them to other activities
- What happens if they don’t ‘work’?
- Will they suit all students? – different learning styles
 - Mix of activities

Game 2: Production function game



- Activity
 - Production runs (2) in a factory, involving moving balls from one place to another
 - Extra workers are added one at a time
- Equipment:
 - About 30 balls (e.g. tennis balls)
 - 4 buckets (or baskets or cardboard boxes)
- Students divided into two teams
 - Object to get as many balls from one end to the other in 30 seconds

Game 2: Reflections



- **Easy to set up and fun to play**
 - Can bring alive a potentially dry subject area
 - Flexible: can be played with 1, 2 or more teams
- **Can demonstrate**
 - Diminishing returns
 - *TP, AP and MP*
 - Can derive *TC, AC, MC, TR, AR, MR* and Profit
 - Shifts and movements along product and cost curves from technological change
 - Effects of changing fixed and variable costs

Experiment 3: Playing Cards!



- **Activity**
 - Each person (or pair) is given four cards of the same value (e.g. four threes or four queens)
 - Works well with 26 students
 - Each person plays two cards each round without the other players finding out what cards they played
 - The cards are returned at the end of each round
 - Based on [Holt and Laury](#)

Experiment 3 – Playing Cards



- Each red card kept = pay-off of £20
- Each red card contributed to the stack provides a pay-off of £25 for each participant/pair
- Each red card contributed to the stack provides a pay-off of £1 for each participant/pair
- Each red card contributed to the stack provides a pay-off of £5 for each participant/pair

Public Good Experiment (Linear - VCM)



- Pay-off for participant 'i' in any round t is

$$\pi_{it} = \alpha x_{it} + \beta \sum_{j=1}^n g_{jt}$$

- α = Marginal return from keeping a red card (£20)
- β = Marginal return from a red card contributed (£25, £1 or £5)
- $MPCR = \beta/\alpha$
- Is $n\beta > \alpha$?

Public Good Experiment



- Very easy to set up and fun to play
- Flexible
 - $MPCR$ can easily be changed
- Could easily be adapted into a non-linear/threshold game e.g.
 - If RC contributed < 10 : Pay-off = 0
 - If RC contributed ≥ 10 : Pay-off = £50/player
 - Refund/rebates

Computerised Experiments



- Advantages
 - “Free ride” on existing resources
 - Little preparation
 - Speedy
 - Automatic tabulation of results
 - Some are difficult to do hand-run
- Limitations
 - Class size
 - Computing facilities
 - Time constraints

More Information



- See Economics Network site for a range of games and tips on their use
 - <http://www.economicnetwork.ac.uk/themes/games.htm>
 - http://en.wikiversity.org/wiki/Economic_Classroom_Experiments
