

Hello Students,

As we did not have time to discuss the midterm, I thought I would let you know something about the grading. The test is 105 points. Each question in Part A is worth 15 points, and each True-False question is worth 3 points.

The test is graded on an absolute as opposed to relative scale. For example, in question 1 each part is worth 3 points and is compared to a correct answer for scoring, rather than the question being graded relative to other students. Although this approach might result in lower scores than you are used to, I think that it is more fair, as it is difficult to keep in mind 22 answers in making judgements about relative answers!

The grading for the course depends on the midterm, oral presentations, final, and paper. The total scores are translated into grades depending on which method produces the higher score, the traditional scale (i.e., 90-100 A & A-, 80-89 B+, B, B-, etc) or the curve. Scores from previous classes are also considered, so do not feel like you are competing against one another.

After you read through and think about the key, let me know if you have any questions about the material.

ECON 439/539
Public Policy Analysis
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Midterm Exam Key

Instructions: This exam has 2 parts, Part A and Part B. In Part A, you choose 5 of 6 questions to answer. Part B consists of True-False questions that all students will answer. Calculators, notes and books are not allowed. Be sure to define your terms, and to label all axes and curves in graphs. Best of luck.

PART A – Answer 5 of the following 6 questions.

1.
 - a. Define market failure as it was defined in class and in the reading.
 - b. According to economic theory, market failure occurs in 4 cases. List and briefly describe these 4 cases.

- a. Market failure occurs when the market fails to achieve the socially optimal (efficient) level of output.

- b.
 - ① Market power – arises from oligopoly, differentiated products, and monopoly. $P > MC$ and the market underproduces the good.

 - ② Imperfect information – consumers do not know a product exists, or do not know a product's qualities, e.g., a used car; producers do not know an individual's characteristics, e.g., health for health insurance.

 - ③ Externalities -- unpriced benefits or costs imposed by one economic agent on another

 - ④ Public goods -- characterized by: nonrivalry in consumption (use of the good by 1 person does not diminish the quality or quantity of another's use) and nonexclusion (cost of excluding non-paying consumers is prohibitive).

2. a. List 4 advantages and 4 disadvantages of using experiments to investigate economic behavior.
- b. Describe and give examples of each the following behavioral patterns:
- i. Anchoring
 - ii. Endowment effect

a. Advantages of Experiments

- Can control influences on decision-making, unlike in the complex real world.
- Easier to establish causality.
- Subjects can be interviewed afterwards about their understanding and thought processes.
- Easier for the general public to understand than other empirical techniques such as regression.

Disadvantages of Experiments (Any 4 of the 5 below)

- Small samples
- Unrepresentative samples
- Behavior may be influenced by perceived expectations of the experimenter.
- Artificial environment
- No meaningful monetary consequences from decisions.

- b.i. Anchoring -- Occurs when someone's choices are linked to prominent but patently irrelevant information.

Example: When college students were first asked how many times they had gone on a date in the past month and then asked how happy they had been overall, the correlation between responses = 0.66; but when a 2nd group of students were asked questions in reverse order, the correlation between responses to the 2 questions was close to 0.

- b.ii. Endowment effect – refers to the observation that people tend to value something more when they own it than when they don't.

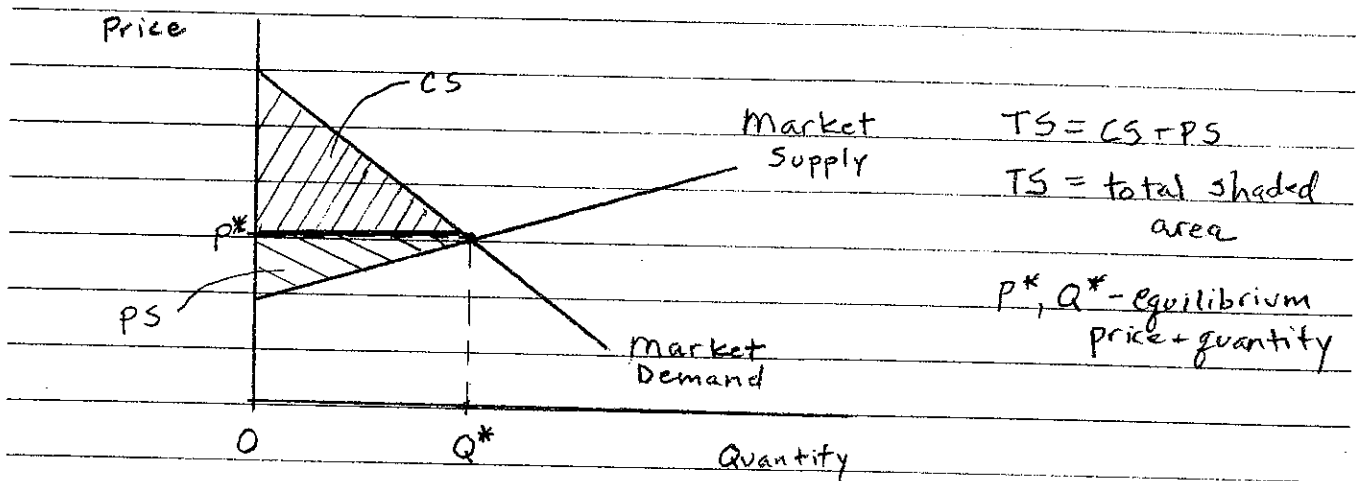
Example: In an experiment on college students, half received a mug, and half did not. Students who had mugs were willing to sell the mugs for a higher price than the amounts that students who did not have mugs were willing to pay for them.

3. a. Define consumer surplus, producer surplus, and total surplus verbally and graphically.

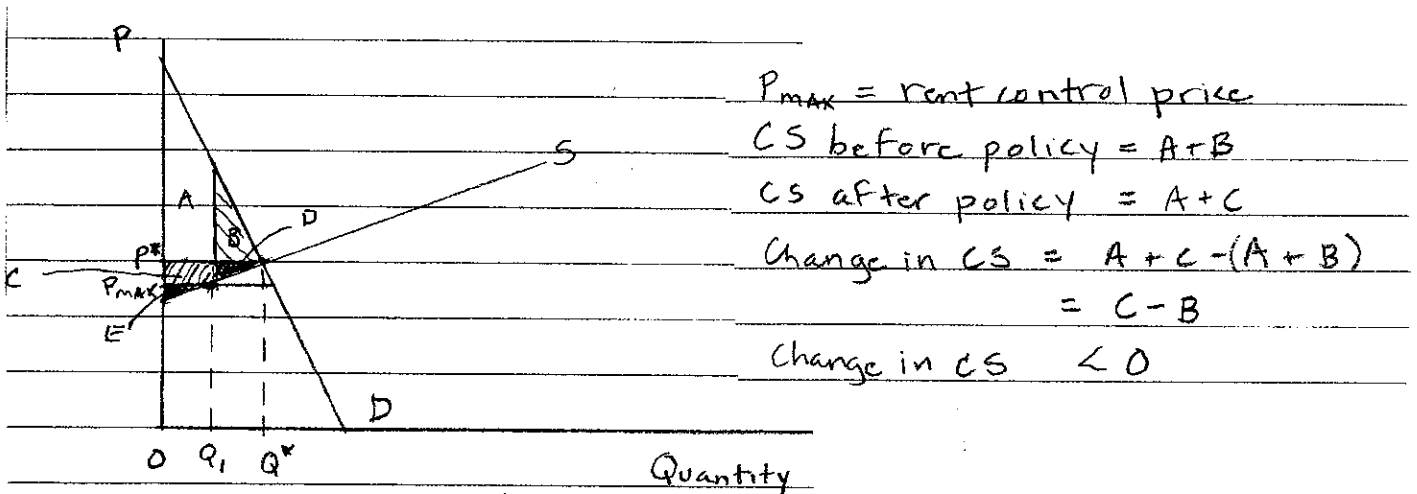
b. Is it possible for a rent control policy to reduce consumer surplus? Use a graph to illustrate your answer.

a.

- Consumer surplus is the difference between what a consumer is willing to pay and what he/she actually pays for a good.
- For each unit of a good, producer surplus is the difference between the market price the producer receives for the good and the marginal cost of producing this unit.
- Total surplus is consumer plus producer surplus.



b. Yes.



Notes: The supply curve does not go through zero.
The supply curve does not shift. The price is set by policy in this question, not the market.

4. Choose a presentation, other than your own, and discuss the article presented. Address the following issues. (Please put your answer in list form.)
- Primary question(s) addressed in the paper
 - Method used to analyze the question
 - Data source used in the article, if relevant
 - Results, focusing on the implications for the primary question(s)
 - Policy implications.

Answer varies.

5. a. What is the difference between the egalitarian and utilitarian views of an equitable allocation of goods?
- b. In slicing pieces of a pie for 6 people, how should the pie be sliced according to the egalitarian view? According to the utilitarian view?
- c. Write down a general equation of a social welfare function. In the utilitarian view, what would be the values of the weights in the social welfare function?

a. The egalitarian view holds that all individuals should receive equal amounts of goods, whereas the utilitarian view holds that we should maximize the total utility of all members of society.

b. Egalitarian: 6 pieces should all be of equal size.
Utilitarian: the person who likes pie the most (gets the highest level of utility from pie) should get the biggest piece. For example, if Joe likes pie more than John, and John likes pie more than Sylvia, and Sylvia likes pie more than Tani, and Tani likes pie more than Zack, and Zack likes pie more than Jill, then Joe should get the largest piece, John the next largest piece, and so on until Jill gets the smallest piece.

c. General Social Welfare Function: $SW = a_1 U_1 + a_2 U_2 + a_3 U_3 + \dots + a_n U_n$
where a_i = value society places on the i^{th} person's utility.
[Alternative answer: $SW = f(U_1, U_2, U_3 + \dots + U_n)$]

In the utilitarian view, all of the weights (a_i) would be equal to 1.

6. a. Define Pareto efficiency.
- b. In a competitive market economy, Pareto efficiency is achieved (under regularity conditions). Instead of a market economy, suppose that government decides what to produce and how to allocate goods to members of society. What information would government need to determine the *Pareto efficient allocation* of goods? Write your answer in the form of a list of 3 conditions, and define your terms.
- a. A *Pareto efficient* allocation of goods is an allocation in which no one can be made better off without making someone else worse off.
- b. Pareto efficiency requires the following conditions:
 Efficiency in exchange: $MRS_A = MRS_B$
 Efficiency in production: $MRTS_1 = MRTS_2$
 Efficiency in the output market: $MRT = MRS_A = MRS_B$
 For the entire economy, MRS must be equal for all consumers, MRTS must be equal for all firms, and MRT must be equal to MRS for all consumers.

Thus, the government would need to know:

- i. MRS for all consumers at different allocation levels,
- ii. MRTS for all firms
- iii. MRT all combinations of goods

where MRS_i = marginal rate of substitution of good y for good x for consumer i
 = amount of good y that consumer i is willing to give up for one more unit of good x
 $MRTS_j$ = marginal rate of technical substitution of labor (L) for capital (K) for good j
 = amount by which K can be reduced when 1 more unit of L is used, so that output remains constant.
 MRT = marginal rate of transformation of good y for good x
 = amount of good y that must be given up to produce one additional unit of good x

This is not part of the answer, just fyi:

Pareto efficiency does not depend on the prices of inputs and outputs, only the 3 conditions above. Therefore, the government does not need to know the prices of inputs and outputs to obtain Pareto efficiency.

The discussion in class involving prices relates to showing that competitive markets achieve Pareto efficiency.

This question shows that the information requirements to obtain Pareto efficiency are so steep as to render the ability for government to determine an efficient allocation nearly impossible.

It also speaks to the power of competitive markets in achieving efficiency without having to obtain this extensive information.

PART B – This Section is Required. Circle T if the statement is true, and F if it is false.

7.

- a. **T** **F** Given the presence of feedback effects between the market for gasoline and the market for SUVs, a partial equilibrium analysis will overstate the effect of a gasoline tax on the price of gasoline.

I am accepting both true and false answers in part (a). If we analyze the case of complements using the method that we used for substitute goods in class and in the reading, a False response is correct. However, on p. 6 of the Course Pack, Pindyck and Rubinfeld say that with complements, a partial equilibrium analysis will overstate the impact of a tax, so I am not marking points off for a True response.

- b. **T** **F** A Utility Possibilities Frontier shows the combinations of 2 goods that give a consumer the same level of utility.
- c. **T** **F** An equitable allocation may not be efficient.
- d. **T** **F** An efficient allocation may not be equitable.
- e. **T** **F** A cross-sectional data set consists of a sample of individuals, households, firms or a variety of other units, taken at a given point in time.
- f. **T** **F** Economists have not yet been able to incorporate findings from behavioral economics and neuroeconomics into economic models.
- g. **T** **F** In the Ultimatum Game, one player divides a fixed prize—say \$10— between he/she and another player; then the game ends.
- h. **T** **F** Often people with addictions exhibit behavior that is dynamically inconsistent.
- i. **T** **F** In a regression model where an individual's wage depends on years of education, the appropriate estimation technique is binomial logit.
- i. **T** **F** The Second Welfare Theorem implies that any competitive allocation of goods that society deems equitable can be achieved by government redistribution of resources.