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ECON 202—Montgomery College  
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## EXAM 2

- There are 110 possible points on this exam. The test is out of 100.
- You have one class session to complete this exam, but you should be able to complete it in less than that.
- Please turn off all cell phones and other electronic equipment.
- You are allowed a calculator for the exam. This calculator cannot be capable of storing equations. This calculator cannot double as a cell phone.
- Be sure to read all instructions and questions carefully.
- Remember to show all your work.
- Try all questions! You get zero points for questions that are not attempted.
- *Please print clearly and neatly.*

**Part I: Matching.** Write the letter from the column on the right which best matches each word or phrase in the column on the left. You will not use all the options on the right and you cannot use the same option more than once.

2 points each.

- |                                     |   |
|-------------------------------------|---|
| 1. <b>C</b> Adverse selection       | A. Combats adverse selection  |
| 2. <b>I</b> Loss aversion           | B. Combats moral hazard   |
| 3. <b>H</b> Piece rates             | C. Example: going on a date with someone who turns out to be rude.  |
| 4. <b>E</b> Reference point         | D. Example: offering bonuses if employees sell more financial products to customers only to discover many sales are fraudulent. |
| 5. <b>A</b> Screening               | E. Example: using the number of Facebook friends your friend have to determine if you're well-liked.                            |
| 6. <b>G</b> Tournaments             | F. Example: working hard to make sure someone is punished for a minor violation   |
| 7. <b>D</b> Unintended consequences | G. Not a good system if one person is much more talented than others.   |
|                                     | H. Not a good system if output is hard to measure.  |
|                                     | I. Utility of gain < disutility of loss   |

1. *Adverse selection is making a choice that was flawed from the beginning. Going on a date with a rude person is (for most people) a mistake. There's no incentive effect here (the person is not rude because they were chosen for a date); this is just the result of poor screening on the part of the other person.*
2. *Loss aversion describes how people fear more pain from a loss than the joy they get from an equal gain. If I give you \$10 and then take it back, you're worse off than if I never gave you the money in the first place.*
3. *Paying for output—piece rates—is not a good idea if it's hard to measure output. If you try piece rates for something like computer programming (say, \$100 for every program created), you will get terrible programs. See question 7.*
4. *A reference point is a value used to assess other values. If you have 800 Facebook friends, you don't know if that's a lot or a little. You might reference other people's count to determine if that's a high number.*
5. *Gathering information before you make a decision combats adverse selection because it corrects asymmetric information.*
6. *If a competitor is really good, other participants won't try hard in a tournament. That star might know this and not try as hard as she*

*could, either. This is not a good system. (How hard would you try if you're in a swim race against Michael Phelps?)*

7. *Obviously, the goal was not to incentivize fraud. But because of the incentives in place, that's what happened when Wells Fargo implemented this plan from 2011 to 2015. It encouraged employees to make fake accounts, though it didn't intend to.*

**Part II: Multiple Choice.** *Choose the best answer to the following.*

4 points each.

8. Game designer Mark Rosewater once noted there are two types of game mechanics: up mechanics and down mechanics. Up mechanics are bundled with tools that are a little harder to get but allow the player a new ability. Down mechanics are bundled with tools which are cheaper but come with a hindrance. Players strongly prefer up mechanics. Which concept predicts this preference?
- a. Elasticity
  - b. Endowment effect**
  - c. Comparative advantage
  - d. Price discrimination
  - e. None of the above

*The endowment effect notes that people value something more if they feel like they own it. Down mechanics take something away while up mechanics give something new. Even if these mechanics are, from a strategy perspective, equally good, players will prefer paying more to get something new instead of getting a lower quality, but cheaper, option.*

9. Some economists suggest that that price of popcorn at the movies is a form of price discrimination: the movie experience is a tied good composed of tickets and popcorn. Those who really value the experience of the movies pay more because such people tend to get popcorn. If the price of popcorn is **not** a form of price discrimination, which fact would challenge the theory?
- a. The theater has a monopoly on selling popcorn
  - b. The popcorn gets cold very quickly (it cannot be resold)
  - c. The theater needs to clean up after popcorn eaters (the costs aren't uniform)**
  - d. A & B
  - e. None of the above.

*Both A and B would support the theory of price discrimination. Only C suggests a possibility that it is not price discrimination since the costs are not uniform (and thus the costs of serving a non-popcorn eater are different from serving a popcorn eater).*

10. Which of the following is an example of moral hazard?
- a. **Carelessly pulling out of a parking spot, knowing that insurance will pay any damages you cause to other cars.**
  - b. Going to see a movie you know will be terrible.
  - c. Hiring an employee that, unbeknownst to you when you hired him, isn't smart enough to do the job well.
  - d. B & C
  - e. None of the above

*Answer C is adverse selection (note that better screening would have caught this person before you hired him) and B is just being dumb (there's no asymmetric information here). But answer A reflects a change in incentives. Because insurance will pay for damages, you act differently than you otherwise would, hence moral hazard.*

11. If a good is elastic, it is most likely due to:
- a. Its low price
  - b. Its large number of complements
  - c. **Its large number of substitutes**
  - d. B & C
  - e. None of the above

*Price has little to do with elasticity. The exception is if it's in terms of a person's budget (a small percent of budget would suggest a small price) in which case it would be an inelastic, not elastic, good. Complements have little to do with elasticity. More substitutes, however, suggest it's easier to walk away from a higher price. The good is elastic.*

12. US Highway 12 is part of a crucial two-lane artery from the seaports in Washington State to the tar sands in Canada. Extracting oil from the tar sands requires very large equipment: transporting it takes up both lanes of US 12. In August of 2010, Idaho granted ConocoPhillips a road permit which allowed it to transport four oil processing units. Without this permit, ConocoPhillips would have to transport those units a much longer distance to get to their destination. If no permits for US 12 were allowed, how would that affect the elasticity of which curve in the market for oil?
- a. The supply curve would become more elastic
  - b. **The supply curve would become less elastic**
  - c. The demand curve would become more elastic
  - d. A & C
  - e. None of the above

*Without the permit, it takes more time to deliver inputs. Also note that this reduces the availability of inputs. Both of these make the supply curve less elastic (or more inelastic).*

13. Former judge Andrew Napolitano argued in March of 2014 that President Lincoln buying up all the slaves in the South and setting them free would have been cheaper (both in lives and money) than fighting the Civil War.<sup>1</sup> At the time, the international slave trade was abolished by an act of Congress; no slaves were imported into the United States. Assume this was strongly enforced. Based on this information, would such slave redemption be more successful or less successful than modern-day slave redemption (as we discussed in class)?
- More successful because the supply of slaves was more elastic then
  - More successful because the supply of slaves was less elastic then**
  - Less successful because the supply of slaves was more elastic then
  - Less successful because the supply of slaves was less elastic then
  - They would be equally unsuccessful

*The problem with modern-day slave reparation is that the supply curve is quite elastic because people can easily import slaves from all over the world. Sometimes it's forced trafficking but often women are lured into coming into the U.S. of their own volition and only after arriving are they enslaved. If the ban on slave imports in the 1800s was strongly enforced, then the supply of slaves would be less elastic and so such redemption would be more successful. Travel, too, was more expensive then compared to now so even with equal enforcement, the supply curve was more elastic.*

*I do not know how well enforced this ban was. It is equally likely it wasn't enforced well at all and if not the assumption that it was, Option E would be the best choice.*

*One thing is for certain: Civil War-era slave redemption would have been more successful than modern day gun buy-back programs.*

14. Imagine you work at a movie theater that offers student discounts. To demonstrate they are eligible of the discount, customers must show a student ID. This is pure price discrimination; students are not less expensive to serve compared to other patrons of the theater. Suppose a man in his 40s shows his obviously expired student ID. Is it a smart business decision to accept it and give him the discount?
- No, because the discount is for students and he's not a student.
  - No, because if he's in his 40s, he can surely afford to pay full price.

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<sup>1</sup> Ignore the fact that when the Civil War began, both sides believed it would be a short war and thus comparing the cost of the entire war with the cost buying up all the slaves is a comparison that is only relevant in hindsight.

- c. Yes, because it will show other customers how seriously you take your discounts.
- d. Yes, because he's demonstrating he is sensitive to price.**
- e. None of the above

*Remember, price discrimination isn't about being nice. It's about separating out those sensitive to price from those insensitive to price. Those with a low willingness to pay from those with a high willingness to pay. Holding onto your student ID decades after you don't need it anymore is difficult. This man may not be a student, but you have the discount because students tend to be more sensitive to price. If he belongs to that price-sensitive group, you'll want to honor his ID. Otherwise, you might not get his business at all.*

*For similar reasons, you wouldn't offer the discount to someone who is clearly a student (e.g. is of the appropriate age and is carrying a backpack) but doesn't request the discount.*

15. During an interview Steve Cole, a sales manager at a car dealership, revealed that he considers how much the customer appears to know about the car when he's negotiating a price. Ignorant people tend to pay a premium on their car. How is this "ignorance premium" explained with price discrimination?
- a. People who don't bother to research probably don't want a car that much.
  - b. People who do research probably know that gas is very expensive and thus require a cheaper car.
  - c. People who don't bother to research are probably less sensitive to price.**
  - d. A & C
  - e. None of the above

*Cole is using a customer's level of knowledge to determine how sensitive they are to prices. If you are willing to research a car, you are probably more willing to shop around or walk away than someone who can't be bothered to research.*

16. Los Angeles has a comparative advantage in movie making because:
- a. It has high tariffs on movies made elsewhere in the US.
  - b. It has a low opportunity cost for making movies.**
  - c. It has the most productive capacity in the US.
  - d. B & C
  - e. None of the above

*By definition, comparative advantage is determined by who sacrifices the least amount, or who has the lowest opportunity cost.*

17. What is the relationship between flexibility of production and elasticity of supply and why?
- Greater flexibility means more elastic supply because producers can easily leave low-priced production and enter high-priced production.**
  - Greater flexibility means more elastic supply because it becomes easier to find substitutes for inputs of production.
  - Greater flexibility means less elastic supply because it cuts into the time allowed to produce something.
  - Greater flexibility means less elastic supply because it would require more inputs to be that flexible, thus it's harder to adapt to changing prices.
  - None of the above

*Nimbleness of production options allows easier transition and adaptability, which allows for an easier response to prices.*

18. Consider the following table of maximum capacities. Who has the comparative advantage in furs?

	<i>Maximum Gold</i>	<i>Maximum Furs</i>
<i>House Lannister</i>	500	100
<i>House Stark</i>	30	60
<i>House Targaryen</i>	15	10
<i>House Baratheon</i>	200	300

- House Lannister
- House Stark**
- House Targaryen
- House Baratheon
- It is impossible to tell with the information provided

*To solve, calculate how much gold each House gives up to make on fur.*

*Lannister:*  $500 / 100 = 50$

*Stark:*  $30 / 60 = 0.5$

*Targaryen:*  $15 / 10 = 1.5$

*Baratheon:*  $200 / 300 = 0.67$

*House Stark has the cheapest furs; they have the comparative advantage.*

19. Which of the following would cause the elasticity of supply of robots in Pittsburgh to decrease?
- Other cities get smaller
  - Other cities get larger
  - Pittsburgh gets larger
  - A & C**

- e. None of the above

*As a city gets larger the supply of its goods become more inelastic as it becomes harder and harder to adjust the quantity. Think in extremes: if the city was the size of a planet, wouldn't it be harder to increase the supply of robots compared to a city the size of a hamlet? And since this determinant is relative—a larger city compared to others—if other cities shrink and Pittsburgh stays the same size, that's functionally the same as Pittsburgh getting larger...because it's getting **relatively** larger.*

**Part III: Short Answer.** Answer the following.

16 points each.

20. Using the accompanying table of maximum capacities and the graph below, indicate which country has a comparative advantage in beer and which country has a comparative advantage in wine. Be sure to show your work.

	Wine (Barrels)	Beer (Kegs)
France	1800	500
England	800	800
Germany	400	1700

*One barrel of wine costs:*

$$\text{France} \quad 500 / 1800 = 0.278 \text{ kegs of beer}$$

$$\text{England} \quad 800 / 800 = 1.000 \text{ keg of beer}$$

$$\text{Germany} \quad 1700 / 400 = 4.250 \text{ kegs of beer}$$

*France has the comparative advantage in wine.*

*One keg of beer costs:*

$$\text{France} \quad 1800 / 500 = 3.600 \text{ barrels of wine}$$

$$\text{England} \quad 800 / 800 = 1.000 \text{ barrel of wine}$$

$$\text{Germany} \quad 400 / 1700 = 0.235 \text{ barrels of wine}$$

*Germany has the comparative advantage in beer.*

21. For each of the following pairs of prices and quantities, calculate the elasticity of demand using the midpoint method (aka arc price elasticity).

	Quantity 1	Quantity 2	Price 1	Price 2
a.	50	100	\$9	\$6
b.	20	22	\$3	\$1
c.	14	8	\$5	\$17

d.	900	100	\$15	\$135
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$$a) \frac{(100-50)/(100+50)/2}{(\$6-\$9)/(\$6+\$9)/2} = \frac{50/75}{-\$3/\$7.5} = \frac{5/7.5}{-3/7.5} = -\frac{5}{3}, \text{ elastic}$$

$$b) \frac{(20-22)/(20+22)/2}{(\$3-\$1)/(\$3+\$1)/2} = \frac{-2/21}{\$2/\$2} = \frac{-2/21}{1} = -\frac{2}{21}, \text{ inelastic}$$

$$c) \frac{(14-8)/(14+8)/2}{(\$5-\$17)/(\$5+\$17)/2} = \frac{6/11}{-\$12/\$11} = \frac{6/11}{-12/11} = -\frac{1}{2}, \text{ inelastic}$$

$$d) \frac{(900-100)/(900+100)/2}{(\$15-\$135)/(\$15+\$135)/2} = \frac{800/500}{-\$120/\$75} = \frac{8/5}{-\$8/5} = -1, \text{ unit elastic}$$

*Don't forget the last question on the back!*

22. Explain the difference between Smithian and Ricardian specialization. Currently, Silicon Valley is the country's biggest center for innovation. Which economist would most likely argue that any major US city could have been that hub of information technology innovation?

*Smithian specialization refers to the gains derived from learned behavior and time-saving techniques that comes with focusing on a single task. With Smithian gains, people are interchangeable. If two individuals are each really good at different tasks now, you could switch them around and, after an adjustment period, lose no productivity.*

*Ricardian specialization is about comparative advantage. It derives from attributes. Unlike Smithian specialization, it suggests that people (and cities, and countries) are not interchangeable. Gains from specialization result from natural talents, endowments, and other considerations which means people are not interchangeable. If people are doing their comparative advantage, having them do something else will result in a net loss of productivity.*

*Smith would have therefore been the most likely to argue that Silicon Valley could have happened in any US city. Had IT pioneers set up shop in Atlanta or Cleveland, the engineers working on the early computers would have invented new ways of developing this emerging technology (note this is one of the ways Smith argues specialization leads to greater productivity) and the city would have adapted and capitalized off this emerging pattern.*

*Ricardo would have probably argued that only a few—perhaps only one—US city could have had Silicon Valley. The Valley is home to a world-class university which attracted many of these pioneers in the first place. The Valley also didn't have a major specialization before this happened so the opportunity cost of the people who lived in the area was relatively low, underscoring its comparative advantage. The closest thing they had to a specialization was Stanford University and Department of Defense funding involving the Space Race, both of which synergized with its current success.*

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