

Principles of Microeconomics – Econ1014
Week 2 Homework Assignment (non-mandatory)

Cost Benefit Analysis

Please complete this and turn it in to the TA at the classroom door at the start of class on Wednesday, September 10th if you wish it to be graded for extra credit. It will be available to be picked up at the econhelpdesk and you can review it with a TA by Tuesday of the following week. Your name and pawprint should be written legibly at the top of each page and all submitted pages should be stapled together.

1. Opportunity Cost

a. Suppose you are trying to decide what to do this weekend and you identify three possibilities. First, you can stay in Columbia and work where you expect to earn \$500 for the work. Second, you can go to a Cardinal's baseball game in St. Louis where you expect to pay \$50 for the transportation and food costs. The ticket is free. You expect to get \$300 worth of enjoyment from the game. Third, you can go on a camping trip with some friends in the Mark Twain National Forest. You will ride with your friend who is not charging you for gas. You will pay \$30 for camp fee and campfire food. You expect to get \$250 worth of enjoyment from the camping trip with your friends. If you choose to stay in Columbia and work, what is the opportunity cost of staying in Columbia to work?

The net benefit of the Cardinal's game is $\$300 - \$50 = \$250$.

The net benefit of the camping trip is $\$250 - \$30 = \$220$.

The next best opportunity to staying in Columbia is the Cardinal's game which is worth \$250 to you so this is your opportunity cost of staying in Columbia.

b. Suppose you have a week off from school and you are trying to decide what to do with your time. You can spend the week studying for your classes which you believe will result in better grades. Suppose the increased grades are worth \$1000 to you. You can also spend your time traveling for the week. The net benefit of the trip is worth \$1200 to you. This means the benefit minus the cost of the trip. This means you will be \$1200 happier at the end of the trip than at the start of the trip. You can also work for your family's business where you expect to earn \$900. You would also enjoy the time with your family and you value the time spent with your family at \$300. What is the opportunity cost to you of spending the week studying?

The value of the week traveling is \$1200.

The value of the week working with your family is $\$900 + \$300 = \$1200$.

This means you do not have a single "next best alternative". Both alternatives are worth \$1200, so either is your next best and since each is worth \$1200, then the opportunity cost of studying for the week is the lost \$1200 you would get from traveling or the lost \$1200 you would get from working with your family.

2. Sunk Costs

In the following examples, can you identify any sunk costs? How should sunk costs be considered in your cost benefit analysis?

- a. Suppose you had \$2000 to invest in April and you were choosing between purchasing stock in two alternate companies - an alcohol distributor called "ItsAlwaysSunny" and a pharmaceutical company called "BadBreak" – which are both selling for \$20 a share. You decided in April to purchase 100 shares of stock in "ItsAlwaysSunny" at a price of \$20 each. It's now August and you have to make a new investment decision – should you hang on to "ItsAlwaysSunny" or should you sell and buy "BadBreak"? Between April and August the price of "ItsAlwaysSunny" has fallen to \$12 per share while the price of "BadBreak" has risen to \$25 per share. "ItsAlwaysSunny" however pays a monthly dividend of \$100 while "BadBreak" offers no dividend payment. Are there any sunk costs of selling your current stock and switching to the new stock and what are they?

Many people might decide to hold onto this stock, "ItsAlwaysSunny" because they can see that if they sell they will have to sell for \$8 per share less than they originally paid. They then decide that this is an \$8 per share cost of selling in order to buy the alternate "BadBreak" stock. However, this is actually a sunk cost that should be ignored. You have already lost the \$8 per share; it is gone regardless of whether you sell this stock or hang onto it. When making your new investment decision you should only consider your new evaluation of the profitability of these two stocks. If you feel that "ItsAlwaysSunny" will continue to be less profitable than "BadBreak", then you should sell and buy "BadBreak" but if you feel that it will in the near future do better than "BadBreak" then you should hang onto it. In other words, you should ignore the past performance and only consider your expectations for future performance. Past performance is a sunk cost.

- b. Suppose you and your best friend from high school both come to Mizzou for college and the two of you decide it would be fun to share an apartment. You each sign a lease that requires you each to pay rent of \$500 per month for 12 months and you agree to each pay a share of the utilities based on how much time each of you is in the apartment. In other words, if you spend 8 hours per day in the apartment and your roommate spends only 4 hours per day in the apartment then you pay 2/3 of the utilities and your roommate pays 1/3. Six months into the lease you and your friend have a huge fight and you no longer feel comfortable living with him (her). You have an aunt and uncle in town who offer to let you stay with them for the next 6 months rent-free. You are trying to decide whether to move out of the apartment and stay with your aunt and uncle. Are there any sunk costs and what are they?

The rent for the remaining 6 months still has to be paid according to your lease, whether you stay in the apartment or move out early. For this reason it is a sunk cost. It is a cost that has to be paid regardless of whether or not you move out.

Since your agreement regarding utilities is that you pay only for the share of utilities you actually use, then if you move out early you don't pay any utilities but if you stay in the apartment you pay utilities. This means that utilities are not sunk. The amount you pay does depend on your decision to stay in the apartment or leave early.

- c. You are trying to decide whether or not to go on a float trip this weekend with some friends. If you decide to go you will contribute \$200 for your share of gas, food, camping fees and boat rental fees. Your family, however, is planning a 70th birthday party of your grandmother. Your whole family will be there and you will only get this one chance to celebrate your grandmother's 70th birthday. Based on this information, are there any sunk costs of attending your grandmother's party instead of going on the float trip and what are they?

Since you haven't yet paid any of the expenses for the float trip, none of these costs is sunk. If you decide to go on the trip then you will pay these expenses but if you decide to go to your grandmother's party instead, you can avoid paying these expenses. This means they are not yet sunk and that they do need to be considered in your decision-making process.

3. Calculating Marginal Benefits and Marginal Costs

In the following cases, calculate the marginal benefit and/or marginal cost of the following decisions. Consider only those costs and benefits listed in the questions.

- a. Suppose you have 4 weeks of winter vacation and you are trying to decide how to spend your time. You are considering a trip to Buenos Aires, Argentina, where the average temperature during this time is 82° F. You are planning to enjoy the beaches while studying Spanish. The value you place on the beach time is equal to \$300 per week and the value of the improved Spanish language skills you expect to have from this study is equal to \$2800 because you expect that this improvement in your skills will help you get a higher paying job. You have to pay \$1400 for airfare and other transportation expenses, \$210 per week for housing and \$90 per week for food. If you stay in Columbia instead, you can live at home with your parents where you will have no housing expense but they will require you to contribute \$50 per week for groceries. You expect to work over the 4 week break if you stay in Columbia, earning \$250 per week in salary (after-tax take-home pay). You also would have the opportunity to spend time with friends, worth a total of \$600 but you would incur \$200 in extra expenses for activities spent with friends. What are the costs and benefits of the trip to Buenos Aires?

Costs

- \$1400 in airfare and other transportation expenses
- \$840 for housing
- \$360 for food - \$200 for food = \$160 extra for food
- \$1000 in lost earnings
- \$400 in lost value from time with friends

Benefits

- \$1200 value of time on beach
- \$2800 extra pay