

AAE101: Intro to Ag. & Applied Econ.

Discussion Section 1

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Logistics

Discussion sections:

- Thursdays 3:30-4:20pm – 10 Agricultural Hall.
- Thursdays 4:35-5:25pm – 150 Russell Laboratories.
- Fridays 11:00-11:50am – 104 Russell Laboratories.
- Fridays 1:20-2:10pm – 150 Russell Laboratories.

Office hours: I will hold office hours on Wednesdays from 11am to 12pm in 312 Taylor Hall. Also, I am available by appointment on Wednesdays at 3pm. In case you cannot make it to my office hours, we can arrange an appointment to discuss your questions. In those cases, please email me with your questions in advance.

Email policy: This is the preferred way to contact me. You can email me whenever you want – my email is at the top right of this page. I will try to answer in the next 24 hours. I will not be answering emails after 10pm or on Sundays.

*This handout is based on the corresponding handouts from previous years by Felipe Parra Escobar, Matt McKetty & Talita Silva. Modifications and additions in this version by Erick.

Tips:

- Ask any questions you have. Sometimes several students have the same question, but no one asks it. So, by asking, you are probably answering someone else's question.
- Give feedback as to what you would like me to focus on.
- Try to submit everything on time. Make time to solve assignments, do not do it in the last minute.

Today's goal

To understand graphs, curves, and slopes as they relate to economics.

Economics

- Economic resources are **scarce**. This restricts the options and demands choices.
- Opportunity costs: To obtain more of one thing, society forgoes the opportunity of getting the next best thing.
- Marginal Analysis: Analyze decision making by comparing additional benefits to additional costs.
- Economics relies on the scientific method. Thus, we have widely accepted theories, called **economic principles**. Economic principles are generalizations, use assumptions and most of them can be expressed graphically.
- *Caeteris paribus*: Also called the other-things-equal-assumption.
- The individuals' problem: Individuals have limited income, unlimited wants and preferences.
- The firms' problem: They cannot produce infinite goods. They face costs that limit their production possibilities.

Graphs

Definition: A *graph* is a visual representation of the relationship between two economic quantities or variables. We use them to simplify and summarize more complex phenomena. Let's review some key concepts:

Direct relationship: Occurs when two variables change in the same direction. This can be represented by an *upsloping* line. For example: consumption and income.

Inverse relationship: Occurs when two variables change in the opposite direction. This can be represented by an *downsloping* line. For example: ticket prices and attendance. More people go to a concert or a match when the prices drop.

Dependent and independent variables: The independent variable is the source, the one that changes first. The dependent variable is the outcome, the variable that changes due to a change in the independent variable.

Slope of a straight line: Ratio of the vertical change(the rise or drop) to the horizontal change(the run) between any two points. For example:

$$\text{Slope} = \frac{-100}{+40} = \frac{-10}{+4} = -2.5 \quad (1)$$

Slopes and marginal analysis: In economics, we are concerned with changes at the margin. For example, 1 additional hour of studying may increase an exam score by 10 points. Slopes are visual representations of these marginal changes.

Vertical Intercept: It is the point where the line meets the vertical axis.

Linear relationships: They are represented by equations of the form:

$$y = a + bx \quad (2)$$

Where y is the dependent variable, a is the vertical intercept, b is the slope of line, x is the independent variable.

However, most relationships in the world are **nonlinear**. That is, the slope does not remain the same at all points along the line. In this case, the lines curve.

Practice Questions

1. Graph and label as either direct or indirect relationships you would expect to find between:
 - (a) The number of inches of rainfall per month and the sale of umbrellas.
 - (b) The amount of tuition and the level of enrollment at a university.
 - (c) The number of hours studied for an exam and the price of football tickets.
2. The following table contains data on the relationship between saving and income. Rearrange the data into a meaningful order and graph. What is the slope? What is the intercept? Write the equation that represents the line. What is predicted income at \$12,500 level of income.

Income Per Year	Savings Per Year
\$15000	\$1000
0	-500
\$10000	500
\$5,000	\$0
\$20000	1,500

3. Suppose that $C = a + bY$ with C = consumption, a = consumption at zero income, b =slope, and Y = income.
 - (a) Are C and Y positively or negatively correlated?
 - (b) Would the curve for this equation slope upward or slope downward?
 - (c) Are the variables C and Y inversely related or directly related?
 - (d) What is the value of C if $a = 10$, $b = 0.5$ and $Y = 200$?
 - (e) What is the value of Y if $C = 100$, $a = 10$, $b = 0.25$?

Intentionally left blank for answering questions.

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