

Foundational Concepts

AEB 2104

Agricultural Economics

<http://www.geocities.com/dsolisw/AEB2104.html>

What is Economics?

Background:

- Nature and mankind combine to cause the need to economize in deciding what things we will buy with our ***spendable income***.
- In addition, we are required to decide on how and for what purposes our ***resources*** (labor, capital, etc) will be used.
- The relationship between the amount of things available and the amounts desired causes ***scarcity***

Opportunity cost and the law of Diminishing Marginal Utility

- A good or service is **scarce** when we must give up (sacrifice) some amount of other thing to get it.
- So we need to make choices.
- **Opportunity cost**: is the value of a product forgone to produce or obtain another product .
 - E.g., eggs and steak
- The “**Law of Diminishing Marginal Utility**” states that for any good or service, the marginal (additional) utility (satisfaction) of that good or service decreases as the quantity of the good increases, ***ceteris paribus*** (everything else hold constant).

What is Economics?

- **Economics** is a social science which investigates human behavior (**choices**) and its consequences in a world with **scarce** resources.
- In the overall, economics is concerned with overcoming the effect of scarcity by improving the efficiency with which scarce resources are allocated among their many competing uses, so as to best satisfy human wants.

Areas in Economics Analysis

Economics

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graph TD; A[Economics] --> B[Microeconomics]; A --> C[Macroeconomics]
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Microeconomics

is a branch of economics that studies how individuals, households and firms make decisions to allocate limited resources

Macroeconomics

is a branch of economics that deals with the performance, structure, and behavior of a national or regional economy as a whole

Uniqueness of Agriculture

- Two important characteristics of the agricultural industry that make it distinctive from all others.
 - Cyclical nature of production caused primarily by physical and biological factors.
 - Price instability resulting from the effect of changes caused both within the market for agricultural products and physically

Cyclical nature of production



Price instability

- Prices for agricultural commodities changes for several reasons:
 - Climate and pests affect production levels (supply) affecting prices.
 - High fixed cost inhibit output reduction (adaptation to lower market prices)
 - International policies (entry barriers, production control, target prices)
 - Subsidies (rich countries)
 - International aid

What is Agricultural Economics?

*“Agricultural economics is an applied social science dealing with how humans choose to use technical knowledge and scarce productive resources such as **land**, **labor**, **capital**, and **management** to produce food and fiber and to distribute it for consumption to various members of society over time”*

What is Agribusiness?

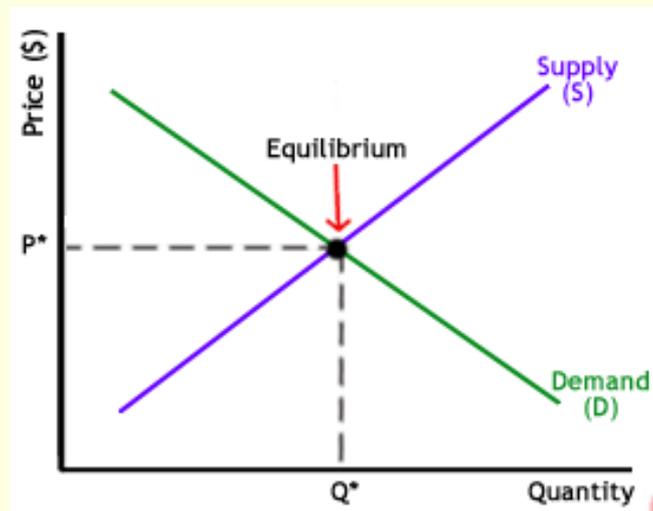
“Agribusiness is the sum total of all operation involved in the manufacture and distribution of farm supply; production operation on the farm; and the storage, processing, and distribution of farm commodities and the items made from them”

How to get a degree in agribusiness and what I can do with it?

- Students earning a degree in agribusiness may major in farm management, production economics, agricultural marketing,
- Agricultural economist can be found in financial institutions (banks, brokers), on farms and ranchers (managers), agro-industries such as oil, grain, and fertilizers companies (analysts), universities (researchers), and so on.

Model building

- An economic model attempts to abstract from complex human behavior in a way that sheds some insight into a particular aspect of that behavior.
- The expression of a model can be in the form of words, diagrams, or mathematical equations, depending on the audience and the point of the model.



Model building: an example

- The goal of this study is to analyze the determinants of household hurricane evacuation choice for a sample of 1,355 households in Florida.
- Individuals subject to the risk of a hurricane event face a dichotomous decision: stay at home or evacuate to a safer area.
- Previous studies has shown that this decision is influenced by several factors including (1) R which represents an individual's perception of risk and their previous hurricane experience; (2) W which tied to wealth and/or income; (3) I is the household demographics; (4) S measures of social interaction and sources of information; and (5) O a vector of other variables:

$$E_i = f(R_i, W_i, I_i, S_i, O_i)$$

Model building: the results

Variable	All	
	Coef.	ME
CONSTANT	0.136 <i>0.153</i>	--
EXPERIENCE	0.162 <i>0.084</i>	0.062
MOBILE	0.899 <i>0.131</i>	0.344
FLOOD	0.234 <i>0.083</i>	0.100
INCOME	0.013 <i>0.031</i>	0.005
OWN	-0.254 <i>0.082</i>	-0.100
FAMSIZE	-0.032 <i>0.043</i>	-0.012
KIDS	0.106 <i>0.057</i>	0.041
PET	-0.219 <i>0.091</i>	-0.084
FRIENDS	0.076 <i>0.078</i>	0.030
NOAA	-0.073 <i>0.083</i>	-0.028
EXPENSES	-0.055 <i>0.021</i>	-0.021
SFL	-0.596 <i>0.078</i>	-0.242
<hr/>		
Model χ^2 [df]	168.98 [12]	
% of Correct	72.38	

Probit analysis of evacuation decision.

The empirical results suggest that households living in risky environments (mobile home and flooding areas) are more likely to evacuate. In addition, households with kids and those who have experience the treat of a hurricane also display higher probabilities to evacuate. Conversely, homeowners and households with pets are lees likely to evacuate than their counterparts. Regional differences in propensity to evacuate are also clearly demonstrated, with households in southeast Florida less likely to evacuate than those in northwest Florida.

The function of management

- **Management** is the process used to control or direct a situation.
- Each of us make choices every day that affect our lives, thus we are managers.
- Whenever a choice of an action over another is made, there is an implication that the chosen alternative was (**rationally**) preferred over the one discarded.

5 steps for managerial decisions

- Observing a problem and thinking about the solution
 - Problem and opportunities need to be identified within the objectives of the business
- Analyzing with further information
 - Additional information is essential to solve a problem
- Making the decision
 - Careful analysis and consideration of alternatives choices is needed to make a decision
- Taking action
 - Based on the analysis it is necessary to take action and implement the decision
- Accepting responsibility
 - One must be able to accept blame for the unwanted results of a wrong decision as well as credit for successes

Managerial decisions: Case of Wal-Mart

- What is the goal of the business?
- Find out a problem
- Alternative causes of this problem
- Making a decision
- Taking action
- Accepting responsibilities

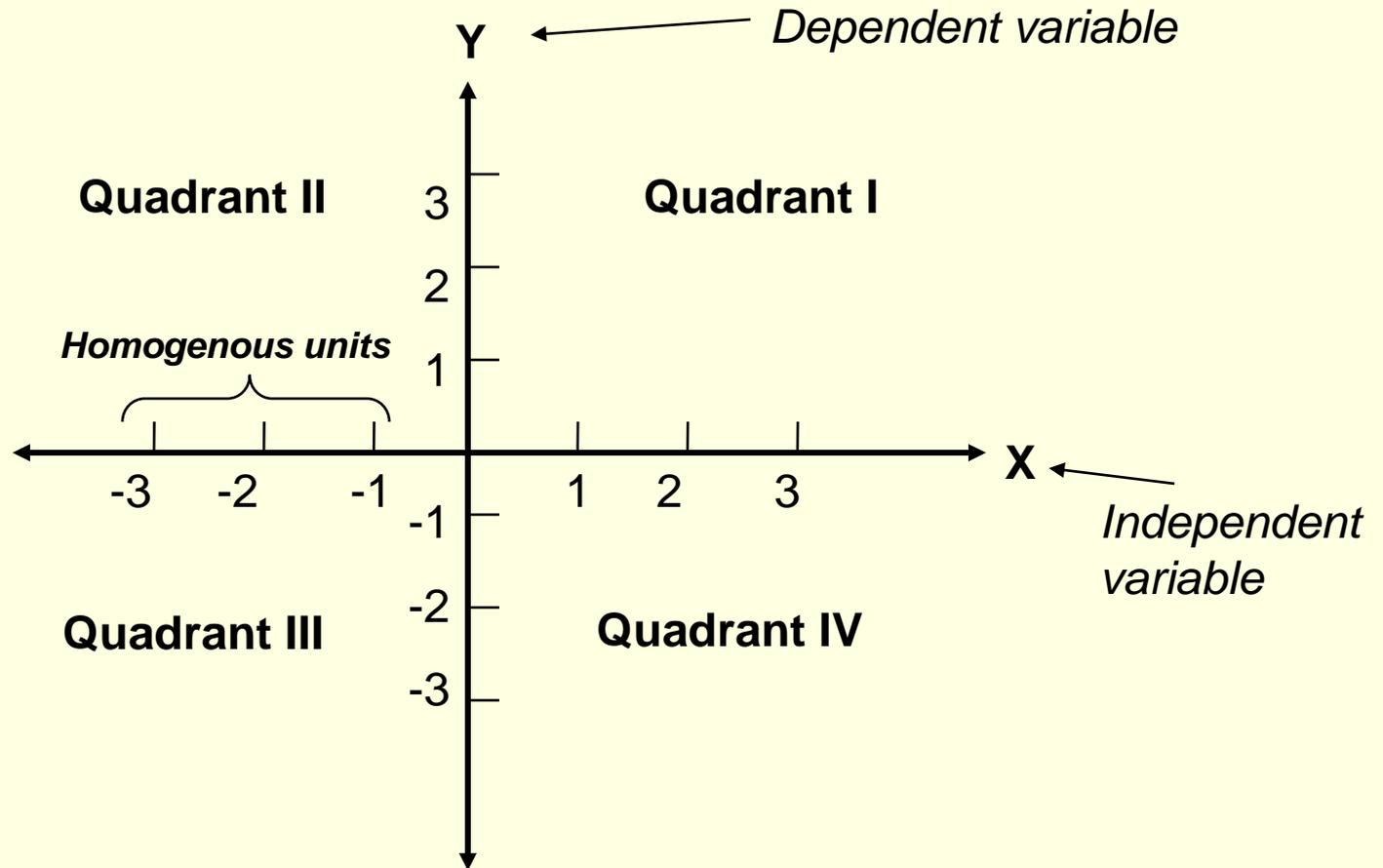
The value of judgment

- **Positive economics** is the branch of economics that concerns the description and explanation of economic phenomena. It focuses on facts and cause-and-effect relationships and includes the development and testing of economics theories.
- **Normative economics** is the branch of economics that incorporates value judgments about what the economy *should be* like or what particular policy actions *should be* recommended to achieve a desirable goal.
- Different values systems may recommend different policies
- E.g., small-scale farmers

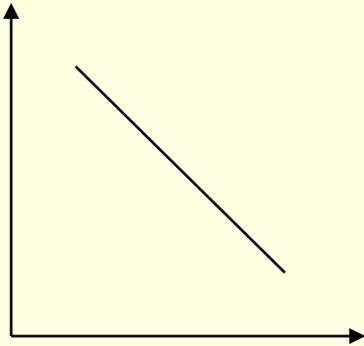
Using graphs

- The goal of economic analysis is to explain people's response to changes in their economic environment.
- If the casual relationship in this sphere can be correctly identified and specified, future behavior can be predicted with some degree of certainty.
- A graph can visually demonstrate relationships between variables.

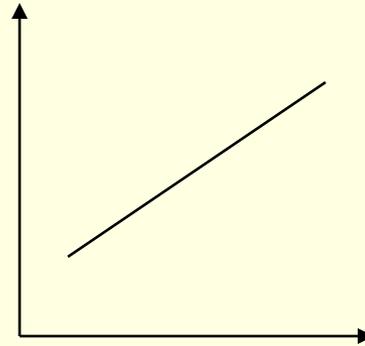
Quadrants of a graph



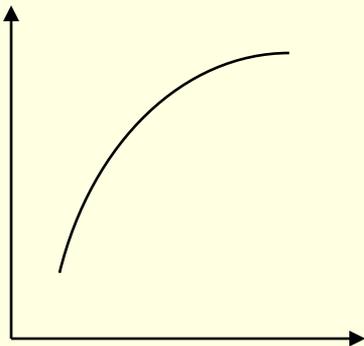
Type of graph used in economics



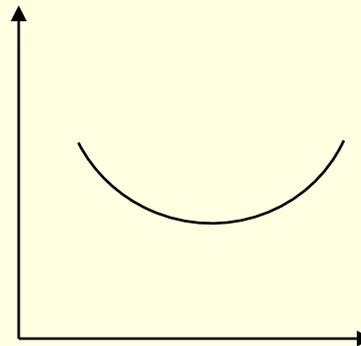
Demand Function



Supply Function



Production Function



Cost Function

Example: demand for running shoes

Theoretical model:

QD = f [price of running shoes, price of each available substitute, price of each available complement, expectations of future price changes, after-tax consumer incomes, consumer tastes and preferences, advertising expenditures, number of consumers].

Empirical analysis:

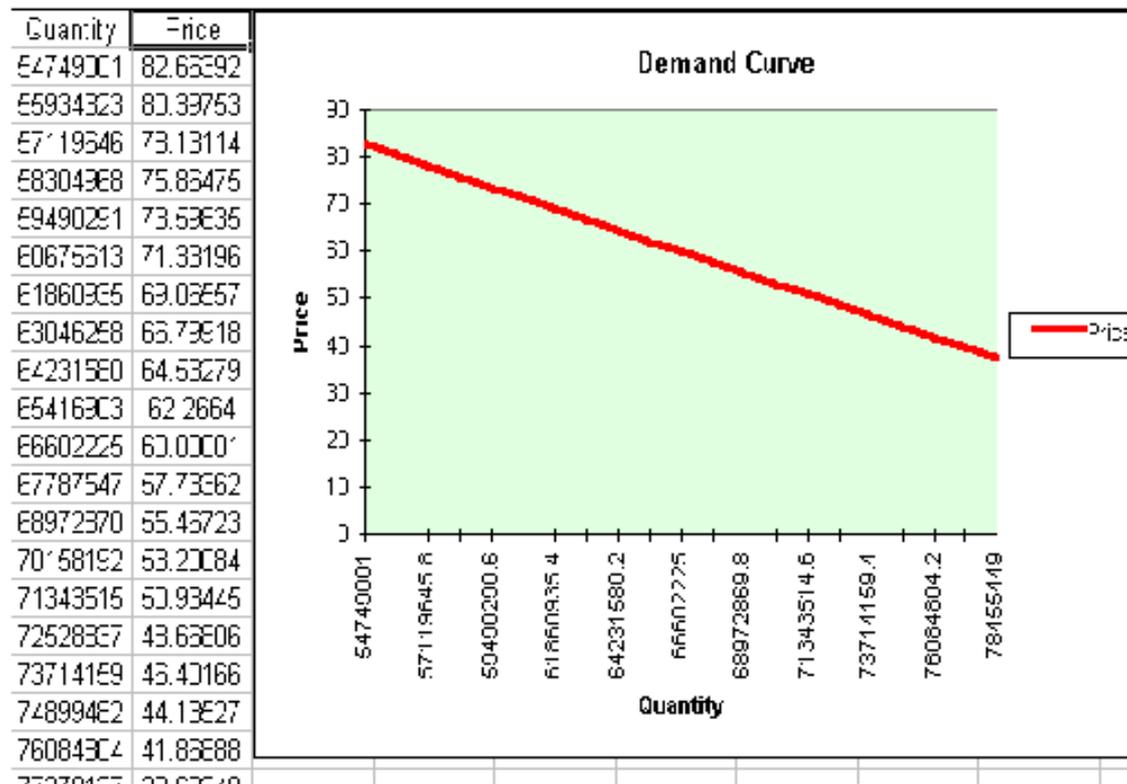
$$QD = -523,000 \times AVGP + 84,000 \times WALK + 2108 \times DISPINC + 0.44 \times POP - 290,459 \times AVGAGE + 0.068 \times ADVEXPEND + 32,000 \times ICC$$

AVGP is the average \$ price of running shoes in the US, **WALK** is the average \$ price of walking and aerobic shoes in the US, **DISPINC** is average disposable income of runners in the US, **POP** is the number of runners in the US, **AVGAGE** is the average age of runners in the US, **ADVEXPEND** is total industry advertising expenditures in \$, and **ICC** is the average value of the Index of Consumer Confidence.

Example: demand for running shoes

$QD = -523,000 \times AVGP + 84,000 \times 50 + 2108 \times 24,000 + .44 \times 80,000,000 - 290,459 \times 30 + .068 \times 200,000,000 + 32,000 \times 97$, or

$$QD = 97,982,230 - 523,000 \times AVGP$$



Exercises

- Supply
- Demand
- Market equilibrium
- Exponential
- Quadratic