AGEC 3603 Agricultural Marketing and Price Analysis

Lecture 1 - Introduction

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Time and Place

We will meet here in L329 14:00-15:50 Monday and Wednesday
My office is in the ICB Building Room 315.
Office Hours Tuesday 10:00-12:00
I expect most questions can be dealt with in class or using Piazza (https://piazza.com/cau.edu.cn/fall2016/agec3333/home)

Who am I?

I studied Modern Asian Studies at Griffith University, Australia specialising in Economics and Chinese, after graduating I studied Economics, Business and Econometrics at the Universities of Augsburg and Constance in Germany and then went on to do my PhD in Agricultural Economics at the University of Queensland in Australia. I taught Economics and Agricultural Economics at the University of Queensland, Australia, and at the University of Alberta, Canada and have taught Economics and Business in France at La Rochelle Business School and worked as a researcher in the School of Environmental Science at the University of East Anglia, UK and at the Institute for Biodiversity, Animal Health and Comparative Medicine, at the University of Glasgow, UK. My research is concerned mostly with the application of game theory and optimal control theory to agricultural, environmental and resource economic problems and with microeconomics in general.

What is the course about?

Marketing of agricultural products, approach taken in agricultural economics differs to some extent from marketing in business and agribusiness. Related to the approach of quantitative marketing where models similar to structural models in industrial organization play a role.

Commodity prices

Commodity prices have three dimensions:

- Time dimension
- Pricing at a point in time
- Price integration across markets

Trends, volatility and public policy

- The poor are vulnerable to price increases (both trends and fluctuations)
- Price fluctuations lead to financial risks and uncertainties for farmers, food processors and other agribusiness firms
- Global food price crisis in 2007-2008 led to debate on food affordability and speculation in agricultural commodity markets

Structural pricing

Pricing of commodities at a particular point in time

- Compare prices for wheat in two different regions, e.g. France and Saudi Arabia
- Coffee beans in the Singapore wholesale market and a futures contract for coffeee on the Singapore commodity exchange
- Eggs at the farm versus retail level in Australia (i.e. the marketing margin)
- A high versus low grade of rice at a Japanese wholesale market

Structural vs reduced form

Price integration

Price integration is a measure of the extent to which a supply or demand shock in a partciular region of a particular market affects the relationship between:

1) the regional spot price and the corresponding futures price
2) the spot prices in two different regions
3) the spot prices of substitute commodities

Long-run versus short-run price integration

- Long-run price integration is the change in pricing relationships after the adjustment to equilibrium has been achieved
- short-run price integration is the adjustment of prices to equilibrium

We will mostly consider long-run analyses in this course and ignore the study of transitional dynamics to equilibrium.

The Law of One Price (LOP)

Law of one price occurs because traders seek arbitrage profits If prices were different in different markets traders could buy at the low price and sell at the high price This would lead to the low price being bid up and the high price being bid down leading to prices in different markets eventually equalizing In the long-run the law of one price would therefore hold.

Spatial price equilibrium models

- Beginning in the 1950's Stephen Enke and Paul Samuelson generalized transportation models from operations research to consider how prices equilibrate (approach equilibrium) in spatial models with markets in different locations.
- The model is originally based on a of electrical flow on a network, network flow models are an important class of problems in operations research

Spatial price equilibrium and linear demand

- If we assume linear demand then these models can be solved using quadratic programming rather than as a more general non-linear programming problem (you will do this next week)
- Spatial price equilibrium models allow us to study the implications of the law of one price for trade flows between different locations and to investigate what happens when arbitrage possibilities are eliminated.

Dynamic programming model of storage

- Another important mathematical programming technique used in Agricultural Economics is dynamic programming.
- Not all problems are static in nature some questions we have relate to what happens in different periods of time.
- Consider storing a commodity, such as wool and then selling it later, should you sell the wool straight away or wait and store it and then sell it later.
- Dynamic programming models allow us to study the implications of the law of one price for agricultural decisions that take place in different periods of time.

Commodity Futures Markets

- A common agricultural marketing instrument is that of a futures contract
- Futures contracts let farmers and agribusiness firms lock in favorable prices and manage price and harvest uncertainty.
- The study of futures markets naturally involves some form of dynamic analysis.
- We will study a stylized futures market later in the course.

Biotech and agricultural product quality

- Agricultural products come in different quality grades or classes
- Biotech has increased the trend towards quality differences
- We will examine the implications of quality differences in agricultural products for pricing

Horizontal price integration

- How are markets for different commodities linked?
- How does the ability of farmers to substitute between the production of agricultural crops affect pricing?
- Should we grow crops for biofuels or for food?

Imperfect competition in supply chains

- Monopolistic competition is considered
- Different assumptions concerning market power of retailers on the input market are examined
- Competition in supply chains is considered

Summary

	Quantity	Quality
Space	Spatial price equilibrium	Monopolistic competition
Time	Futures and forward markets	Vertical supply chain

Auctions

- Auctions are frequently used to organize markets in agriculture as well as other sectors of the economy.
- A well developed literature now exists on the economics of auctions.
- We will examine competitive bidding in auctions using game theory (the mathematical study of strategic behavior).

Bilateral bargaining and the organization of agricultural markets

- Bargaining is something you have probably all experienced at some point.
- Bargaining theory is a branch of economics related to game theory
- We will apply bargaining theory to analyze negotiations between an agricultural marketing board and a farm supplier

Summary

- We consider two examples of strategic behavior in agricultural marketing
- There are many more applications of game theory to agriculture where strategic behavior plays a role
- Some other examples include:

Summary

- water resources: shared water resources, water purification, cost sharing
- plant and livestock diseases: veterinary epidemiologists have a growing interest in this approach
- common grazing and pastoralism,
- property rights - tragedy of the commons, common pool resources
- sharecropping, sharing farm profit between a landowner and a tenant farmer.

Summary of Course Organization

- The course takes a "quantitative marketing" approach typical of agricultural marketing.
- You will see clear differences to the way marketing is discussed in your agribusiness management course.
- These are different but not necessarily incompatible perspectives.
- There are many other aspects of marketing and agricultural marketing that we will not have time to cover.
- The course should give you the grounding for further study in agricultural economics or economics or business.
- You will learn skills that are highly marketable in the workforce.