Agricultural Markets

Lecture 5: Marketing System and Margins

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Marketing system links farmers with consumers

- When we enjoy a pizza at a restaurant, or an oven roasted chicken at home, rarely we contemplate about the chain of events—a system, and actions of people involved therein—that has led to the meal in front of us.
- This *agricultural marketing system*, also known as the *food system*, links producers with consumers by transforming an agricultural commodity into a food product.

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Marketing system transforms commodity into food

- Although farmers and consumers sometimes directly interact (e.g., farmers markets), most food products usually go through a complex processing and distribution system after they leave the farm-gate and before they land on a shelf of a retail store.
- Marketing transforms products over time, space, and form through storage, transportation, and processing.
- In the process, the usually bulky, perishable, and homogeneous farm commodities are transformed into more concentrated, storable, and differentiated food products.

Price is information

- The agricultural marketing system consists of multiple stages, and involves a number of intermediaries, such as processors, distributors, wholesalers, and retailers.
- Between each stage of the system there is a market, through which goods are exchanged and prices are set.
- Prices contain a great deal of information, and play an integral role in conveying this information among producers, processors, input suppliers, and consumers about the costs of buying, selling, storing, processing, and transporting.

In complex systems information gets diffused

- The longer and more complex is the marketing system, the more difficult it is to relay information from a consumer to a farmer.
- A profit-maximizing farmer will only supply a better quality commodity, or add a certain attribute to the commodity, if they are rewarded for it. When the reward exceeds costs, the farmer will take actions to supply a commodity with desired qualities.
- In presence of uncertainty surrounding the rewards (prices), as well as information asymmetry among buyers and sellers within the marketing system, ensuring that the desired product attributes are present for the right price may be a rather challenging task.

Vertical coordination

- One way to facilitate a coordinated performance among members of the supply chain is by means of contracting.
- A contract is an arrangement between a buyer and a seller, where the parties agree on quantity and price of a commodity to be exchanged months in advance.
- There are different degrees of 'involvement' in contractual agreements. In more 'involved' instances, a processor supplies the inputs and assumes market risks, while a farmer uses own facilities for agreed-upon commodity production.

Vertical integration

- At the extreme, two or more segments of a supply chain go under the same ownership, which is referred to as *vertical integration*.
  - Upstream integration is when a firm begins producing inputs that they previously purchased from their supplier.
  - Downstream integration is when a firm begins performing a function of a firm that previously purchased their product.

Benefits of vertical integration

- Some benefits of vertical integration are:
  - lower transaction costs;
  - re-allocated market risks;
  - more efficient resource allocation, production, and distribution.

Evolution of marketing in developing countries

- In the early stages of development and in remote areas, a relatively high proportion of people live on farms.
- In such societies, where large share of households are somewhat self-sufficient, the demand for agricultural marketing services is limited, which often results in an inefficient marketing system.
- Inefficient marketing system can absorb substantial private and public resources and result in low farm-gate prices and high retail-level prices.
- With development and resulting increased living standards, often accompanied by urbanization, the size and efficiency of the marketing system become more important.

Issues of marketing in developing countries

- The key issues in marketing systems in developing countries are:
  - infrastructure deficiencies that raise the cost of transportation and storage;
  - producers' lack of information; and
  - government-induced market distortions.
- The magnitude of each of these deficiencies differs across regions, and is changing for the better in many countries, but they persist in some nations, particularly in sub-Saharan Africa.
- One effect of these weaknesses is to create a large spread between prices producers are paid for their products and retail prices.

Facilitators of marketing in developing countries

- Good communications (e.g., roads and railroads, telephones and other means of communication) and storage infrastructure are crucial to a well-functioning agricultural marketing system.
- The availability and quality of rural roads, in particular, have a strong influence on marketing costs and on the willingness of farmers to adopt new technologies and sell surplus production.
- Cellphones and internet services increase access to information.
- These days, cellphones and, thus access to information, is widely available to farmers in most places around the globe.

State-run marketing in developing countries

- A marketing problem for producers of major commodities in some developing countries is a situation in which government-controlled marketing organizations (often called *parastatals*) are given monopoly power and legal authority to purchase all of a product while setting its price as well.
- Because agricultural marketing systems are inherently complex, and because markets transmit a large amount of information from diverse sources, decisions made by centralized agencies can create serious market distortions.
- Fortunately, use of agricultural marketing parastatals has declined in recent years, which generally has increased prices received by farmers. In some cases, price volatility has risen as well.

Marketing margins

- In the farm-retail price relationship, the difference between what consumers pay and what farmers receive is called *price spread*, also known as *marketing margin*.
- Consider a profit maximizing retailer, which uses a farm commodity and marketing services as inputs in production. The profit function of this retailer can be given by:

$$\pi = p^r q^r - p^f q^f - C^r(q^r),$$

where p^r and p^f are retail and farm prices; q^r and q^f are product output and commodity input quantities; and the last term, $C^r(q^r)$, represents the retailer's marketing cost function.

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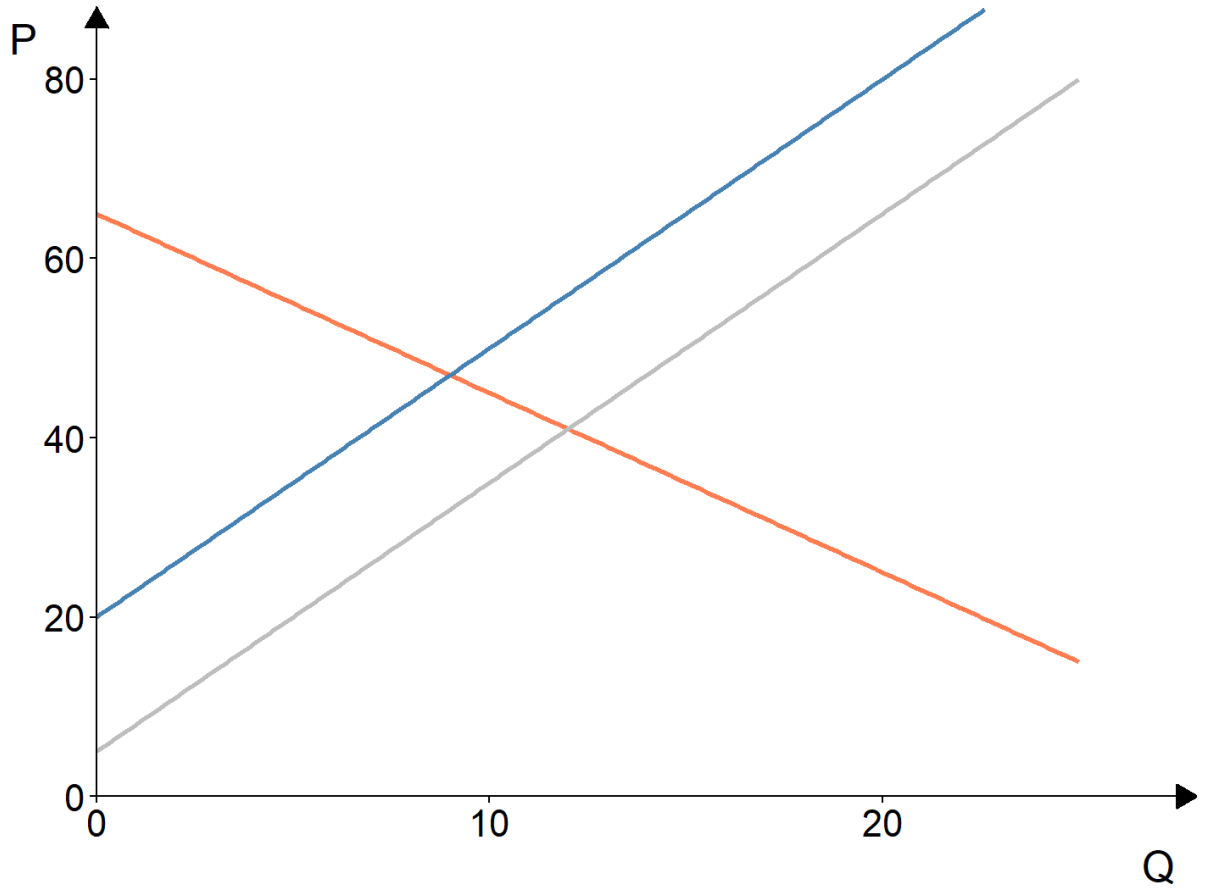
Modeling marketing margins

- For simplicity, we can assume that $q^r = q^f = q$, which reduces the profit function to: $\pi = (p^r - p^f)q - C^r(q)$, where $p^r - p^f$ is the price spread.
- Marketing costs, $C^r(q)$ can be modeled as a linear function of quantity produced, $C^r(q) = c^r q$, where $c^r > 0$ is a constant.
- In such case, marginal marketing cost is the same for any q:

$$\frac{\partial C^r(q)}{\partial q} = c^r$$

This accords with a simple markup rule: the retail price is equal to the wholesale price plus (constant) costs of marketing.

Modeling marketing margins



Modeling marketing margins

- Alternatively, and perhaps more realistically, marketing costs can be modeled, as nonlinear function of quantity produced.
- The usual assumption, in this case, is that the first derivative of the marketing costs function is positive, while the second derivative can be positive or negative (i.e., marketing costs are increasing with output, but they do so at an increasing rate or a decreasing rate).

Factors that impact marketing margins

- Because of a complex marketing system, variables other than just prices and quantities of inputs and outputs may be important in determining the margins. Some of these are:
  - changes in cost of the marketing services that get the farm product to the consumer in the form they demand;
  - changes in factor composition, over time, that may increase the total cost of marketing services;
  - changes in government programs (e.g., taxes and subsidies);
  - changes in market power of firms in the marketing system, resulting in: increased prices paid by a consumer, or reduced prices received by a farmer (or both).

Derived demand at the farm-gate

- Assuming linear demand functions, and constant marketing costs, elasticity of derived demand (faced by a farmer), ϵ^f, can be expressed as: $\epsilon^f = \epsilon^r \frac{p^f}{p^r}$, where ϵ^r is elasticity of retail demand, and p^f and p^r are farm and retail prices.
- Thus, demand for a commodity at the farm-gate is more price inelastic (less price elastic) than demand at a retail store.
- The larger is the marketing margin the bigger is the difference between the two elasticities of demand; it may even be that even though the retail demand is price elastic, the derived demand may end up being price inelastic.

Readings

Tomek & Kaiser, Chapter 6

Norton, Alwang & Masters, Chapter 15 (Marketing Functions and Systems)