AEC 841, MODULE 4D
MARKET INFORMATION AND GRADING

I. Lots of information issues in food system. Much of modern IO deals with this.
   A. Design of efficient contracts to deal with asymmetric information. Whole
      literature on adverse selection and the principal/agent issue, and much of the
      advances in micro-economic theory, including I-O, is based on how relaxing
      perfect-information assumptions changes the conclusions from theory.
      1. E.g., principal/agent models
      2. Nobel prizes to folks like Akerlof, Spence and Stiglitz
      3. How costs of information affect transaction costs ==> How to design
         informationally efficient contracts.
   B. How does choice of coordination forms affect where information flows in food
      system and who owns it? (Market as an information system.)
      1. Key issue: Increasing privatization of previously public sources of info.,
         and the impact of this privatization on food system performance.
      2. E.g., loss of public information with movement to greater internal
         contracting and integration and away from open markets.
         a. Who owned that information previously? E.g., decision in US to
            move to mandatory price reporting in the livestock industry
            implicitly says that the public owned that information.
         b. Relates not only to price and quantity data but also info. on
            product characteristics, as trade moves from publicly defined
            grades and standards to those defined by specific firms (part of
product differentiation).

c. Should that access to information be maintained through mandatory reporting of contract info. Related to issue of thin markets discussed earlier.

d. Problems of information asymmetry in these more closed systems.

3. Ownership of new sources of data--e.g., who owns information generated from scanning data?

4. Questions of info. asymmetry includes various types of information on product attributes, such as nutritional content, way product was produced (organic, etc.).

C. Here the focus will be on public investment in market information systems and grades and standards tools to try to address some of these issues.

D. Note that with increasing vertical coordination in industrial food systems, more information flows taking place outside of open markets. Some of what we will discuss is this issue, but we will focus primarily on market information systems (MIS), which continue to be important in US, and are very important in countries in Asia, Latin America, Africa and E. Europe going through market reforms. Very big component of these reform programs has focused on improving information so that “liberalized” markets will work better.

II. Rationale for Public Investment in Market Information

A. Why won't the market solve the information problem on its own?
1. Public good characteristics of certain types of market information
   
a. **Indivisibility**--Cost of collecting information (a large part of total MIS cost) is unaffected by the number of people who use the information==>large economies of size in data collection--At the limit, a natural monopoly
   
b. **Uncertainty**--Inability of the users to judge the usefulness of the information before they have it ==> risk averse users will under invest in providing information.
   
c. **Nonappropriability**--High exclusion cost. - Is this changing with new delivery systems for market info, such as cell phones? Opening the scope for more private provision, as with Reuters in India.

2. Question of perception of objectivity of private market information systems (small sample size and possible intentional bias)
   
a. E.g., in U.S. in late 1800s and early 1900s, private market news reports were by newspapers owned by principal traders or owners of large terminal markets--incentive for biased info. (also e.g. of current world cocoa forecasts by large London buyers)
   
b. Use of public information systems to keep private sources honest. So even if you have private market information systems in place, that is not prima facie evidence that public reporting is not needed.
c. Are these arguments true in an era of increasing mistrust of government? Issue of how to assure credibility of MIS.

3. Note that certain information products, such as credit reports and custom market analyses, are privately provided. **But these often are based on publicly provided information,** so some public investment is needed to **make these private systems work** (big issue in US now, with dismantling of some of US statistical system under budget pressure--Bonnen).

B. Aims of Public MIS's

1. General aims are to:

a. Achieve a more equitable balance of power among food system participants (knowledge is power). Reduce information asymmetries:

   (1) Economies of scale in gathering and using market information would give large buyers and sellers, particularly those more fully integrated into the subsector, at a competitive advantage relative to small-scale participants (e.g., farmers)

   (2) This was one of reasons that led to public price reporting in the US during the early 1900s.

b. Improve market efficiency (by improving decisions by different participants in the market)
(1) Give voice to consumer sovereignty--i.e., better articulation of consumer demands to producers throughout food system.

(2) Encouraging efficient spatial arbitrage
   (a) Improve trader knowledge about prices in various markets
   (b) Reduce the transaction costs of long-distance trade (agency problem)

(3) Improving production and marketing decisions to reflect changing demand and supply conditions

(4) Gaining or preserving the informational efficiencies of open terminal markets while avoiding the physical costs of assembly--i.e., getting reliable base prices for formula pricing

c. To provide government with needed information to monitor market performance and, at times, to administer prices
   (1) E.g., price support programs--e.g., deficiency payments
   (2) Monitor the impact of government policies--e.g., impact of local purchases of food aid or of various liberalization policies.
   (3) Incentive or control prices in times of war. E.g., biggest expansion for public price reporting and federal grading came with Food Production Act of 1917, which was aimed
at creating incentive prices for farmers as part of World War I effort.

d. Issues of price/market reporting become more complex as you move to more differentiated and value-added products.

III. Process in Collecting and Disseminating Market Information

A. We start with Stigler’s observation that information is an economic good. Therefore, one needs to think about the conditions under which it pays to collect it. Look at marginal costs and marginal benefits of additional information, not simple notion that more information is better.

1. Latter only true if cost is zero.

2. Therefore, how best to organize the information “subsector”.

B. Key points in thinking about public market information systems:

1. Multiple clients

2. Those clients need different types of information. Market information is broader than just price reporting.

3. Who is willing to pay, either directly or indirectly, for the information.
Somewhere someone has to be willing to pay if the system is to be sustainable.

C. Identifying Potential Users of Market Information

1. Farmers
2. Traders, including cooperatives
3. Consumers
4. Government officials and other policy makers (e.g., donors)
5. Academics
6. Needs of farmers and traders may differ by their scale and scope of operations.

D. Identifying the Potential Users' Information Needs

1. Each user will have different information needs, both with respect to types of information desired and frequency.

2. One of the key questions to ask is what sort of decisions different types of participants have to make where uncertainty is a big problem in terms of the costs of a wrong decision. (This information is best garnered from interviewing the market participants.) This helps guide one in where the greatest payoff is to improved market information.

3. For example:
   a. Large traders may have their own market intelligence system to get fairly reliable daily price information, but need improved
information on projected national or international crop production, expected imports (including food aid), and changes in government regulations on the trade.

b. Small traders and farmers may need daily wholesale prices in major markets as well as stock estimates.

c. Consumers may need weekly retail price data and availability information.

d. Government officials need not only current market information to monitor day-to-day situation, but also

(1) historical data (prices, national production, trade, stocks, consumption), appropriately analyzed, so that they get a better understanding of market dynamics (what drives the market)

(2) short- and long-term outlook work to anticipate major policy issues.

4. Which markets to cover--lots or just a few key barometers?

a. Look at correlation of prices across markets?

b. Who uses which markets, and who do you need to serve?

E. Collection of Market Data--Example of US

1. Price and related information collected by market reporters

a. Public price reporting voluntary (true of most MIS in the world)
(1) Public market reporters (AMS) do not use a statistical sample—they try to cover all confirmable trades from those whom they think will give them reliable information. (Tradeoff between sampling and non-sampling error)

(2) Typically report a range of prices rather than a single mean price—Range is more meaningful for the trade.

(3) Also may report "tone" of the market—i.e., qualitative feeling about the conditions of supply and demand and which way the market is going.

b. Public reporting of **grain stocks** information mandatory for largest firms; voluntary for others—Done by mail survey.

c. Private market reporters typically use fewer contacts, make more judgement, and may even "call" a market even though trading of that particular grade of product has not taken place.

d. **Production data**—crop and livestock reporting systems

(1) The SRS of USDA and various state Agricultural Reporting services are the backbone of the US agricultural Production estimates

(2) Involves:

(a) Census of Agriculture every 5 years and census of business every 10 years.
(b) Monthly crop reports, with weekly crop condition reports. Great efforts to ensure confidentiality of these until they are released due to their potential effects on the markets.

(c) Cooperation of farmers (e.g., regarding planting intentions and areas planted) and marketing agencies a growing problem--Need to move towards more objective ways to estimate crop production, through field samples and satellite imagery.

(3) Data on foreign agricultural production comes largely from the Foreign Agricultural Service of USDA, with its system of agricultural attaches in many countries. Some also from CIA and FAO.

(4) Private forecasting units build their analysis largely on this public information. Link between the public and private systems.

F. Analysis and Interpretation

1. What MIS collects are data, but to be useful it must be analyzed to be turned into information--e.g., relationships between variables explored and explained. This is the role of the market analyst. Key tasks
a. Analyzing market data to understand market dynamics in order to explain it to market participants and policy makers.

b. Conducting market outlook--Short-term forecasting

c. Marketing Extension

(1) A public information system does not eliminate all the scale economies of information use. Larger firm has particular advantage in interpretation of market information for its business uses, as it spreads the info. over more trades.

(2) Important role of marketing extension (e.g., by Land Grant Universities) in helping farmers and traders interpret market information and base their marketing strategies upon it. Public provision of information lessens, but does not eliminate the scale advantages of larger firms with respect to market information.

(3) Private sector firms also often carry out this function, especially carrying out custom analysis for larger firms--e.g., private economic forecasting units--Chase econometrics, etc.

d. Policy analysis
e. Diffusion

G. Design issues in MIS’s

1. Need to assure the objectivity of the basic data and analysis--problem of
infusing and protecting a spirit of objectivity in the system.
   a. Structural safeguards--outside oversight committees, etc.
   b. Building up a clientele with a vested interest in objective
      information which will lobby for protection of the information
      system from manipulation.

2. Need to have “customer feedback” to assure that MIS evolves as the
   markets evolve (new markets, new products, etc..)

3. Key design question is to what extent one separates the data collection
   activities from analysis
   a. Question of gains from specialization vs. interaction and synergy.
   b. In most countries, initially the functions are together, then
      increasingly specialized. E.g., in US, data collection largely in
      hands of SRS and AMS, with analysis in hands of ERS and land-
      grant universities.
   c. Dangers of separating data collection from analysis too much:
      (1) May not get as timely analysis and diffusion as needed--
          Less user pressure on statistical agency.
      (2) May get more and more precise measurement of concepts
that are increasingly obsolete as the market evolves and as statisticians are unaware of the evolution. E.g., continued USDA reporting of live broiler prices at farm gate, when industry is almost entirely vertically integrated.

H. Diffusing Market information

1. Need to target diffusion methods to type of users. E.g.,
   a. in developing countries with large numbers of illiterate farmers and traders, have to rely more on radio than print media.
   b. Increasing use of cell phones, including ability to have user charges–e.g. of Reuters in India, Tradenet in Africa.
   c. Frequency of diffusion will also differ by type of user--daily or hourly for price data for traders; monthly or longer for certain types of reports for policy makers.

2. In US, price reports
   a. were first diffused by mail to farm-oriented newspapers
   b. Then shifted to radio
   c. Then USDA leased telegraph services linking all major markets and news organizations
   d. Now some also use 800 numbers.

IV. Challenges in Public Price Reporting
A. Product Definition: Role of grades and standards; uniform weights and measures

1. Purpose of grades and standards
   a. For price reporting to be meaningful and trading on the basis of description to be possible, need agreed-upon product descriptions. Purpose of grading is to provide this.
   b. Aim of grades is to reduce variance of *economically important* characteristics within lots as opposed to across lots.
   c. Such grading is especially important in an industrializing food system because:
      (1) Heterogeneity inherent in biological products like food--can't completely control product specs in production.
      (2) Increasing separation between buyers and sellers raises the cost of personal inspection of each lot sold. E.g., a shipload of grain may be bought and sold 5 times between leaving port and reaching its final destination--Only possible through trading on the basis of description.
      (3) With increased incomes, consumers often demand increased quality products (niche markets). Need to have a mechanism to effectively transmit that demand to producers and reward them for responding to it (*pricing efficiency*).
(4) As processing increases, there develop needs for more tight product specs as quality of processed product is highly dependent on characteristics of the raw-product input.

(5) Need better indicator of product value when crops in storage are used as collateral for loans.

   a. Need for standardization (Economies of scale in reputation).
      Problem of information overload when each buyer sets own standards. E.g., by the late 1800s in US, grain grades had been developed by over 30 different states and trade organizations.
   b. Potential for abuse of market power with private grades, as buyer ends up being sole arbiter of whether a product is up to grade.
      Buyer may opportunistically raise grade standards in periods of market glut (e.g., meat packing industry in early 1900s). One of key motivations for creation of public grading in US was creation of unbiased 3rd party arbiter of a product's grade.
   c. May have pro-competitive effects by creating public "brand names" that allow smaller firms to compete with larger firms—e.g., effect of public meat grading on product differentiation in the meat industry in the 1920s.
3. Yet increasingly, public grades and standards are being replaced by private grades and standards, as private firms find that public G&S are too slow to change and often are too broad; they don’t meet the changing or tight specifications the private firms/supply chains seek

4. Process of establishing grades and standards (both public and private)
   a. Key point--for grades to be economically meaningful, they must reflect differences which are associated with differences in product value by market participants. I.e., grade differences should correspond with:
      (1) Differences in demand for different product characteristics
      (2) Differences in costs in responding to those different demands
      (3) This implies:
          (a) Dangerous simply to import grade standards from one country and impose them on another, where demand characteristics may be different--e.g., irrationality of using US meat grades in West Africa.
          (b) As demand evolves over time, so must grade standards--e.g., broadening of US choice to include more lean meat.
(c) If public grades do not respond to changing demand structures, they will be increasingly ignored by the trade, and private specs will replace it, with all the attendant problems of these. E.g., trade in apples is largely by private specs because buyers consider US no. 1 fancy too broad a class.

(d) Grade standards are closely related to standards of identity, such as in the Codex Alimentarius

b. What goes into a grade standard determines whose interests get counted with what weight, which makes definition or revision of grades a highly charged debate between:

(1) Farmers

(2) Marketing firms and food manufacturers

(3) Retailers

(4) Consumers

(5) E.g., debate over fresh fruit grades. Many of the characteristics upon which grades are based are visual, and it is estimated that up to 40% of the pesticides used on tree fruits are simply to meet these cosmetic purposes. But if you change the cosmetics, will demand still be there?

c. Most impetus for grades and changes from them (via USDA
hearing procedure) comes from farmer and trade groups, not consumers. Mostly used in trade rather than by consumers.

d. Remains voluntary in US, although it may be mandatory to participate in some other programs (e.g., marketing orders).

(1) Degree of participation ranges from about 10% in seafood to 75% for canned vegetables and broilers to 90% for turkeys.

(2) But even if graded, seller doesn't have to reveal grade at sale. So amount sold under grade is less than what is actually graded.

e. One problem is that grade labels may be confusing to consumers. E.g., grade AA for butter, etc. **Overhead on grades from Armbruster et al.**

B. Market reporters becoming part of the price formation process

1. When a public price reporter is dealing with privately negotiated trades and the numbers of traders is small, the price reporter becomes part of the pricing system rather than just a detached observer of it.

2. The exchange of information necessary to obtain the cooperation from buyers and sellers involves the reporter in the price establishment process.

3. The actual price report may be of less value to the participants than the
exchange of market information through a 3rd party (the reporter) that public price reporting entails.

C. Public market reporting and thin markets

1. Dilemma--the more successful public price reporting is in reporting open market prices, the more it makes easier and more reliable formula pricing based on those prices, thereby contributing to thin markets; hence sowing the seeds of its own destruction--i.e., contributing to the unreliability of the prices it reports. Possible solutions:

a. Mandating that a certain % of trade pass through more open markets--but physical assembly costs higher for these markets.

b. Requiring mandatory reporting of terms of trade on privately negotiated direct sales--but

   (1) This won't help if these are formula priced

   (2) May create reluctance to reveal other data--e.g., stocks levels

c. System of forward deliverable contracts