Vertical Linkages in Agri-Food Supply Chains: Changing Roles for Producers, Commodity Groups, and Government Policy

Linda M. Young and Jill E. Hobbs

Market developments arising from closer vertical linkages in agri-food supply chains have given rise to a variety of issues. This paper outlines key issues and discusses possible responses by producers, their associations, and government. A vision of the future organization of agricultural production serves as a basis for discussion. The continued increase in contracting between producers and processors is accompanied by issues of contract transparency, terms, negotiation, and dispute settlement. Other ramifications include producer access to supply chains and the decline of spot markets. Furthermore, the development of agricultural biotechnology products may force a rethinking of the rationale for public investment in agricultural research and development. Evaluation of market power needs to account for efficiency gains from nonstandard forms of organization to achieve a balanced appraisal of the public interest. Agricultural economists are urged to evaluate new forms of firm and industry structure on the basis of how they work in practice rather than in comparison to an ideal form.

The agri-food sectors of many developed countries, including the United States and Canada, are experiencing a trend towards closer vertical coordination. It is useful to evaluate these countries together, as they share some of the same concerns and experiences with respect to increased vertical linkages. Vertical coordination refers to the means by which products move through the supply chain from producer to consumer (Mighell and Jones). Closer vertical coordination has occurred as the use of spot markets has declined, while production and marketing contracts, franchising, strategic alliances, joint ventures, and full vertical integration have increased.

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Changing consumer preferences, biotechnology, information technology, environmental pressures, credit and risk issues, and the reduction of global trade barriers are some of the driving forces behind changes in vertical coordination. Closer vertical coordination has emerged, in part, because these factors result in higher relative transaction costs for traditional spot market transactions. The effects of consumer demand for differentiated food products and of advances in agricultural biotechnology have been to encourage a movement away from commodity production towards the production of food products with diverse characteristics for niche markets. As a result, traditional spot market transactions impose higher search and monitoring costs on transacting parties relative to contracting, strategic alliances, and other forms of closer vertical coordination (Hobbs). Technological change and the “industrialization” of agriculture have also been identified as important influences on vertical coordination (Barkema and Drabentt; Hurt). Previous work has explored in detail the forces driving the agri-food sector towards closer vertical linkages (see, e.g., Bureau, Gozlan and Marette; Henderson; Hobbs and Young; Kalaitzandonakes and Maltsbarger; Mighell and Jones; Schertz and Daft).

This paper focuses instead on market developments and resulting issues that have emerged from the move toward closer vertical linkages. The purpose of this paper is to investigate some of the issues arising from these developments and implications for the respective roles of producers, their associations, and government. Ostensibly, the economic rationale behind many aspects of the traditional role of government policy in agricultural markets and industry development has been to correct market failure and reduce information asymmetry. This role has been manifest through the provision of public price reporting, through publicly funded research and development (R&D) activities, education, and extension activities. We discuss whether the economic rationale for these activities has changed in light of market developments and whether there is a stronger economic basis for private sector involvement, particularly via producer associations. A vision of the evolution and future organization of agricultural production serves as a basis for this discussion.

The Evolution of Agricultural Markets—Past and Future

In 1997, about one third of the value of U.S. agricultural sales was produced under contract (Banker and Perry). Between 1991 and 1997, the share of commodities produced under marketing contracts increased from 16 to 22% of the total value of U.S. production. In contrast, the share under production contracts showed no clear trend. While lack of official data makes it impossible to be precise about the extent of contracting in Canada, industry developments indicate that it has increased, and this trend is expected to continue. For example, contracting is becoming more important in the Canadian hog–pork sector following the removal of several provincially sanctioned agencies that had been the sole marketers of hogs in each province. Identity-preserved supply chains for value-enhanced crops produced under contract are emerging in both countries and coexist with bulk commodity grain marketing systems. Genetically engineered corn, soybeans, and canola have provided a further impetus for close vertical relations between producers, processors, and retailers, as crops with enhanced quality characteristics
must be produced to tight guidelines and their identity preserved to capture their value.

To discuss the implications of closer vertical coordination in agriculture, we need a sense of what agricultural markets may look like in the future. While their visions of the future differ somewhat, analysts propose that the future will bring a mix of market types whose importance will change over time as agriculture continues to industrialize (Boelhje; Brester and Penn; Hamilton 1997). It is predicted that agricultural markets will offer generic commodities, enhanced component commodities, and specific-attribute raw materials. Producers will be a heterogeneous group, including multiple-plant entrepreneurs consisting of skilled producers managing sizable operations in multiple locations and networks of qualified suppliers for particular processing operations, such as already exist in the U.S. broiler or pork industry. Large traditional farms (single-location farms selling bulk commodities to the spot market) may still exist; however, their role will continue to decline. Producers may increase their role in downstream activities through marketing cooperatives or networks. Another group of producers, devoted to producing and marketing high-quality food in nontraditional ways, is likely to grow. This group will include smaller-scale diversified producers and niche marketers.

In conclusion, the agriculture sector will be composed of a variety of products, both generic and highly specialized, with the latter continuing to increase in importance. It is likely that there will be no standard form of agricultural production and that the concept of a representative farm will continue to decline in usefulness. A mix of organizational forms will exist at the farm level and within the entire agri-food chain.

Market Developments, Issues, and Responses

Table 1 identifies three key market developments associated with the move towards closer vertical coordination: a rise in contracting, greater product differentiation, and the increased importance of supply chain relationships. Issues arising from the interaction of the increase in contracting and product differentiation are also presented. The remainder of this paper discusses the issues that arise from these market developments and the implications for producers, their associations, and government. The simple schema represented in table 1 does not account fully for the interdependence between these market trends; neither is it intended to be fully comprehensive. Instead, it simply organizes our discussion of major market developments and corresponding issues.

Increase in Contract Production

As noted previously, vertical relationships increasingly involve the use of production and marketing contracts. Increasing use of contracting has a number of implications for producers and their associations, and for public policy. These issues include access to supply chains, contract negotiation, and dispute settlement, and that the nature of price and quality information available to producers has changed.
Table 1. Market developments and related issues

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<thead>
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<th>Market Developments</th>
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<tr>
<td>Rise in contracting</td>
<td>• Open market prices less available and relevant</td>
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<td>• Access to supply chains</td>
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<td>• Potential for unfair contract terms</td>
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<td>• Potential for contract disputes</td>
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<td>Greater product differentiation</td>
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<td>Increase of both contracting and</td>
<td>• Price reporting decreasing and average prices less relevant</td>
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<td>differentiation</td>
<td>• Quality measurement and verification more complex</td>
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<td>Importance of supply chain</td>
<td>• Complex producer choices regarding whether and which supply chain to join</td>
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<td>relationships</td>
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The Decline of the Spot Market: Price and Quality Information Issues

One frequently cited concern over the increased use of contracts is the impact on the viability and existence of a spot market price (Tomek). As the percentage of production under contract increases, the spot market becomes thin and the market-clearing price becomes more volatile and less representative of the value of the good. While spot market prices provide useful information, it is important to note that price is only one aspect of contract production. Because contracts are often used to ensure that tight quality specifications are met, production under contract will differ from generic commodity production in many cases. Nevertheless, in part to counteract the loss in market information caused by the decline of spot markets, the U.S. Congress has passed legislation introducing mandatory price reporting in the meat packing industry. Packers above a certain slaughter capacity are required to report to USDA’s Agricultural Marketing Service daily price and volume information and terms of trade for fed cattle and boxed beef.

Contract production is frequently associated with different costs and benefits to the producer relative to production for the spot market. For example, closer vertical linkages with processors may provide producers with access to additional information about the requirements of consumers, thereby enhancing the flow of market information back down the supply chain. This benefit is hard to quantify, but it represents a reduction in information or search costs for the producer. At the same time, however, the producer is faced with a more complex transaction involving long-term contractual obligations, and may have to choose between a number of potential contractual relationships. This raises information and negotiation costs for the producer. In general, spot market prices become increasingly irrelevant as contracts between producers and processors change the nature of their relationship and the specifications of the product.
It is helpful to keep in perspective what spot market prices provide to agricultural producers. The interaction of many buyers and sellers ensures that the price is the result of many transactions, and that a buyer with market power is less likely to have lowered the price. The exit of producers over the years from agricultural sectors with viable spot markets, such as the U.S. wheat sector, indicates that a viable spot market does not ensure that all producers will earn normal profits or be able to continue producing over the long run. It also does not guarantee that producers will regard the price as “fair.” In some cases, producers regard a spot market price as unfair due to subsidies to production given by governments throughout the world. The international sugar market is often accused of being simply a dumping ground for product, and the spot market price is not regarded as fair. At other times, the spot market price is regarded as unfair simply if it is low.

Access to Supply Chains

Concern is often expressed over the market power held by commodity handlers and processors (Hurt). A specific concern is that some producers may have difficulty gaining entry to tightly coordinated supply chains. Entry may be difficult due to requirements for sophisticated production skills or the need for specialized equipment or capital. The inability of certain producers to gain entry to supply chains for these reasons would be a continuation of the forces that have prompted producers to exit from agriculture historically. Another reason why producers might have difficulty gaining entry is if processors prefer to lower their transaction costs by dealing with only a few producers who contract to provide large volumes of the commodity in question. This might give rise to a class of producers who are multiplant entrepreneurs (Boehlje). In this scenario, a highly skilled farmer would act as a manager, hiring other farmers to assist in production at various locations. Finally, a third reason for restricted entry could be that a dominant processor with market power could act as a monopsonist, purchasing less of the input than would occur in a competitive market. Discussion of the implications of market power for public policy is continued in a subsequent section.

Collective Bargaining and the Role of Commodity Groups

While there have been efficiency gains in some industries due to closer vertical coordination, the possibility remains that large contractors will use their market power to depress the prices paid for inputs, and to make other contract conditions disadvantageous for producers. This has motivated producers to form associations to bargain collectively with the processor, in a manner similar to labor unions. This is a role frequently assumed by producer organizations in Europe. In the United States, the Agricultural Fair Practices Act (AFPA) of 1967 offers some protection to farmers and ranchers who form associations to bargain with handlers and processors for better prices and terms. The AFPA prohibits handlers and processors from discrimination against or intimidation of producers due to membership in any organization or due to exercising their right to organize grower associations (Hamilton 1997).
The protection given to producers through the AFPA is perceived to be inadequate by some U.S. producers and state governments. For this reason, Maine and Washington have passed state laws to further protect producers’ rights to organize. In addition, the National Contract Poultry Growers Association (NCPGA) has attempted to pass legislation to extend the protection given to growers to organize under the AFPA and the Packers and Stockyards Act of 1921 (Rural Advancement Foundation International). Other groups, such as the Farmer’s Legal Action Group, of St. Paul, Minnesota, have played a role in helping to organize and educate growers. In Canada, producers’ rights to organize are protected by provincial legislation.

In addition to collective bargaining, commodity groups can play a key role in the development of fair contract terms. They are well situated to bring together large and small producers, processors, integrators, attorneys, and others to address the development of contracts that will serve the needs of all parties (Hamilton 1995). In the United Kingdom, the National Farmers’ Union, the Grain and Feed Trade Association, and the United Kingdom Agricultural Supply Trade Association have been involved in developing standardized commodity contracts. Hamilton (1995) states that the involvement of producers and trade organizations in developing contracts has facilitated the development of standardized industry practices and improved contract terms for producers. The involvement of producer organizations is also likely to generate greater “buy-in” on the part of producers faced with the option of joining a closely coordinated supply chain by producing under contract for a specific processor. This reduces the processor’s transaction costs in locating and negotiating with suitable suppliers.

Transparency and Dispute Settlement

A different concern over the increase in contract agriculture is a potential lack of transparency regarding the terms used in contracts. This concern can be addressed by requiring that contract terms be made public. For example, South Dakota requires all packers with gross annual sales of more than $100 million to submit copies of standard contracts, as well as statistics on the method of purchase, the price, and other contract terms (Hamilton 1995). In addition, producer groups have taken measures to increase contract transparency. For example, the U.S. National Contract Poultry Growers home page (http://www.web-span.com/pga) has contracts posted from numerous poultry integrators.

Accompanying the increase in the use of contracts has been an increase in the number of legal disputes between producers and processors over contract terms. Poultry growers have instigated a number of lawsuits against processors over disputes in contract law (Marbery). One response by some U.S. states has been to require mediation before allowing a court to hear a case. Iowa has taken this approach for disputes involving livestock production contracts, and Wisconsin for vegetable contracts. Another method of dealing with disputes that avoids potentially costly legal battles or the strategic use of the threat of litigation by firms is to have the contract specify the arbitration procedures to be followed in the event of a dispute. Avoidance of costly disputes may also be facilitated by ensuring that contracts between producers and processors are complete (insofar as possible) and
equitable to both parties. Writing fully contingent contracts, however, imposes a different set of transaction costs on the parties.

Another important question is how performance is evaluated, since payment of premiums may depend on meeting quality standards or achieving target volumes. If disputes arise over the performance evaluation, will they be resolved through litigation, arbitration, mediation, or administrative fiat, wherein the party with the greater relative bargaining power decides? Finally, questions exist over the timing of payment, particularly when title to the goods is passed before payment is made.5

An evaluation of issues associated with the growth of contract farming should note evidence that many farmers are happy with their contracts and plan to continue contract farming (Lewin-Solomons), and that many integrators have waiting lists of growers who wish to obtain contracts (Hamilton 1995). Hamilton argues that one problem with contracts is that growers expect too much. If the processor is providing the technology and marketing strategy that leads to increased profits, and the grower is not, then it is unrealistic for the grower to expect a portion of those increased profits. He suggests that the goal of government involvement in contract law should be limited to facilitating a fair and informed business relationship.

### Increase in Product Differentiation

**Public versus Private Research and Development**

An increase in product differentiation is a notable development associated with closer vertical coordination. The question of the appropriate roles of public versus private R&D arises from this development. Economic theory predicts that there will be underinvestment in research and development activities if private firms cannot reap the full return from their investment due to free-rider problems created by lack of exclusivity and rivalry. This has long been an argument in favor of public R&D expenditure, for instance, to develop new grain varieties. In the past, once the germplasm had been released in the form of seed, the developers of that variety could not prevent their intellectual property rights from being appropriated by others in a subsequent crop year. Furthermore, the bulk commodity nature of much of agricultural production did not lend itself to branding and product differentiation by which firms could realize returns from their investments in R&D. In these circumstances, we expect market failure to result in an underinvestment in R&D.

The biotechnology revolution and the differentiation of food products on the basis of intangible attributes (food safety, process attributes, etc.) have changed this situation in two ways. First, it has motivated the identity preservation, branding, and differentiation of agricultural products in response to increased demand for highly differentiated food products servicing different consumer segments. For example, so-called “designer eggs” that are high in essential omega-3 fatty acids are now available. In the United Kingdom, a brand of eggs has been launched that differentiates eggs on the basis of their guaranteed “salmonella-free” status. The eggs are sourced only from flocks vaccinated against salmonella and each egg is stamped individually with the company’s brand logo.
Second, technological change has enabled the protection of intellectual property rights. For example, the ability to “switch-off” a plant’s reproduction capabilities means that farmers must purchase new seed for each crop year, rather than saving seed and reusing the same genetic material. In this way, life-science companies who invest in new crop traits are able to capture the value from this investment to a greater extent than was possible previously. In the U.S. corn and soybean industries, private sector investment has introduced new input- and output-trait varieties. The resulting increase in contracting between seed companies, farmers, and grain processors enables those who have invested in the technology to capture the rents. Of course, the advent of Plant Breeders’ Rights legislation has also been important in fostering increased private sector R&D expenditure.

The Dutch potato industry provides an interesting illustration of the incentives for R&D that are created by a closely coordinated supply chain. Rademakers and McKnight describe close cooperation between potato processors and seed potato merchants in the Dutch industry. Through investments in R&D, many of the large seed potato merchants have developed proprietary potato varieties with specific processing characteristics. In some cases, a variety is made available exclusively to a single processor, with the seed potato merchant, growers, and processor linked through contractual agreements. Exclusive access to a variety with specific processing characteristics facilitates product differentiation by the processor, giving the firm a potential competitive advantage over its rivals.

Recent technological developments may enable firms to realize returns from their investments in R&D in a manner not previously possible. For this reason, it is timely for future research to reevaluate public and private sector roles in R&D. Due to the uneven nature of technological change, this reevaluation may need to be focused at the individual industry level.

Quality Measurement and Verification

The combined effect of increased contracting and greater product differentiation raises some interesting quality measurement and price reporting issues. The public price reporting role traditionally performed by governments reduced information asymmetry in agricultural markets. However, it is both less important and less feasible in a closely coordinated system in which “average prices” are not as relevant and price information is not readily available to public agencies. Average prices are no longer a useful indicator of efficiency or a relevant guide to production and investment decisions if products are highly differentiated. For a producer, evaluating whether the price being offered is fair depends on the quality produced. Similarly, the price offered a producer by processors depends on the quality attributes of the differentiated product. Both parties face information costs in setting and evaluating a price. If these transaction costs are sufficiently high, the transaction may not occur and market failure may result. There may be a role for a third party in providing an independent, objective assessment of the quality attributes of the product to reduce information costs for producers and processors, thereby facilitating the development of closely coordinated supply chains.

In a sense, this is the role played by the existing public grading schemes for agricultural commodities. While these grading schemes reduce information and
negotiation costs, they tend to be based on broad, easily measurable commodity attributes. Reducing information asymmetry in a sector with highly differentiated agri-food products will require the provision of more detailed information on relative quality attributes (including intangible ones) than that typically measured in traditional commodity grading schemes.

Technological advances may reduce measurement costs by enabling firms and/or government representatives to measure quality attributes more accurately. In some cases, product characteristics that cannot be evaluated by visual inspection or testing prior to purchase are important to end users. Experience attributes are detectable only after purchase and consumption, such as the tenderness of a steak. On the other hand, credence attributes cannot be determined even after consumption. Very often the latter are “process attributes,” such as whether the product is produced in an environmentally friendly manner, meets certain animal welfare standards, or contains genetically modified organisms (GMOs). Technological developments can transform experience and credence attributes into search attributes that are signaled to the consumer prior to purchase, for example, through brand reputation, labeling, or a quality assurance guarantee. Examples might include the ability to detect the presence of GMOs in a processed product or the ability to determine ex ante the texture, tenderness, and general palatability of meat products.

As a result, two roles can be identified for the government as a third party in reducing information asymmetry. The first is the support of R&D into technologies that reduce quality measurement costs for experience and credence attributes. A second role is in verifying private sector supply chain audits to assure the presence (or absence) of credence attributes. If these attributes cannot be evaluated through measurement, their presence or absence can be assured through close control and coordination of the supply chain. For example, suppose retailer A provides a guarantee to consumers that the pork chops it sells were produced using environmentally friendly or animal-welfare friendly production practices. Consumers wishing to purchase pork chops with this attribute will use this assurance in evaluating the product. There may be a role for the public sector in verifying that Retailer A has sufficient supply chain audits in place to validate this assurance. However, as “markets” in quality assurance verification emerge, the economic rationale for direct public sector involvement diminishes, and this role could instead be performed by the private sector, subject to regulatory oversight or licensing control by the public sector. Indeed, some existing quality assurance schemes feature verification or audits by independent private firms.

What, then, is the appropriate role for government: When should verification of quality information or supply chain audits be performed by the public sector instead of a private sector player? This is a difficult question. Fundamentally, economic theory suggests that governments should become involved when markets fail to allocate resources efficiently. With the revolution in information technology and other advances in measurement technology, markets in information provision and accreditation have become a reality. The public sector may continue to have a role in establishing licensing procedures and industry standards for the provision of information and accreditation, and in facilitating the development of industry-wide quality assurance schemes. The result may be a common set of
industry standards to improve and verify quality. One example from the United Kingdom is Assured British Meats (ABM), an organization established in 1998 with the aid of government funding. According to Fearne:

ABM has the sole aim of restoring consumer confidence in British meat through an industry-wide assurance scheme which is designed to establish minimum safety standards on which retailers will not compete, but will be free to “bolt on” their own “quality assurance” schemes. (p. 221)

An industry-wide standard reduces information asymmetry to the extent that downstream buyers can be assured all products receiving the industry-wide quality assurance mark meet a common quality standard. This role is similar, in principle, to the role governments already play in establishing and enforcing a common set of credible food safety standards. A degree of information asymmetry may remain, however, if there are additional quality requirements specific to individual buyers. In these cases, closer vertical coordination may emerge to reduce the transaction costs from identifying, measuring, and monitoring these additional quality attributes. As Fearne suggests, in these cases, firms may “bolt on” their own contractual requirements or quality assurance schemes.

**Increased Importance of Supply Chain Relationships**

*Producer Education*

The changing nature of vertical coordination has altered the transaction costs facing producers who must find an appropriate buyer and evaluate different supply chain alternatives. By contrast, in the past, the “marketing” of a traditional agricultural commodity was fairly straightforward. The producer shipped his/her grain to the local elevator, and it was graded according to a recognized grading scheme and shipped to market as a bulk commodity. The producer shipped a truckload of cattle to the local packer, or perhaps chose between a number of local packers depending on the prices offered at the time.

Consider instead the scenario in a closely coordinated sector, in which the producer must decide which vertically linked supply chain to join. Perhaps this involves a 5- or 10-year contractual commitment, with specific obligations on the part of the producer with respect to the quantity, quality, and timing of deliveries. Payment might be based on a combination of product quality attributes, the quantity or quality targets achieved by the producer relative to other producers in a “tournament” and/or as a residual of the market return for the final processed product. Access to the market (membership in the supply chain) may require investment in specific assets. The producer may have to follow proscribed cultivation or feeding methods, with detailed documentation and on-farm audits an integral part of the relationship. Periodic consultations with and/or inspection by downstream partners may be involved. The producer’s ability to improve net farm income through changing the input mix may be constrained by contractual obligations with respect to input use or choice of input supplier. All of this requires a very different set of skills for producers. These include skills in contract evaluation and negotiation and management skills relevant to being part of a closely coordinated supply chain where the producer’s autonomy to make decisions is restricted, but where he or she has access to more information with respect to
consumer and downstream buyer requirements. How does this change the role of the public sector? Historically, in the United States and Canada, the public sector has been the primary provider of agricultural education through universities, colleges, and extension services. Increasingly, there is a need for education and advice to assist producers in obtaining the skills necessary to evaluate different contractual alternatives—where the risks lie, how performance will be assessed, and so forth.

**Market Power**

In many cases, closer vertical coordination of the agri-food sector has been accompanied by rationalization and increasing concentration in the input supply, processing, and retailing/distribution sectors. Producers are at a relative bargaining disadvantage, resulting in the well-known economic outcomes of an inefficient allocation of resources and a loss in social welfare. This has long been an issue in agricultural markets, for example, in grain handling and transportation. Recently, however, concentration has increased in other sectors, including meat packing and processing, seed, genetics, and agricultural chemicals industries (Kalaitzandonakes and Bjornson; Ollinger et al.; Paarlberg et al.). Supply chains of vertically related oligopolies have emerged, for example, hog packing and processing firms vertically related to hog genetics firms and feed mills, either through ownership, strategic alliances, or contractual relationships (Sporleder). This presents a challenge for governments to ensure that the social welfare losses and misallocation of resources that result from an abuse of market power are avoided. Competition and antitrust regulations play a pivotal role that is by no means easy, given the absence of market price information in a vertically linked system. Transfer prices between vertical stages are likely to be proprietary information. The role of independent farm producers in this system and the impacts on consumers in terms of prices and product availability are relevant policy considerations.

In applying antitrust regulations to agri-food markets, a balanced approach should consider the potential efficiency gains from a more closely coordinated system. Williamson discusses the evolution of antitrust law over the past 40 years. He states that in the past, antitrust law was based on the concept of the firm as a production function, with the corresponding idea that the efficient boundaries of the firm were determined by technology. The emphasis of antitrust investigations was whether or not entry was possible, neglecting benefits from possible gains in efficiency. Nonstandard methods of contracting were considered to be anticompetitive, as true economies were assumed to take a technological form. Acceptance of transaction cost economics moved the focus of the analysis used in antitrust investigations to the transactions the firm undertakes, with an understanding of how organizational variety arises to minimize transaction costs. Williamson concludes that the greater understanding of the firm as a governance structure increased tolerance of nonstandard, or unfamiliar, business practices that departed from autonomous market contracting. In addition, a greater appreciation of the efficiency gains from other forms of organization has led to a more balanced appraisal of the public interest in the evaluation of antitrust cases.
Conclusions

At the same time that the issues discussed in this paper present challenges to producers and other industry stakeholders, they also present opportunities. The agricultural sector that is emerging promises to be diverse in terms of farm and market organization. This means that producers may have choices in terms of the niche they fill and how to best realize their comparative advantage.

Some institutions are changing, including the usefulness and dominance of the spot market for many commodities. Accompanying the change in the nature of agricultural commodities are changes in the organization of production, with the increased importance of contracting, and possibilities for multiplant entrepreneurs further eroding the autonomous nature of agricultural production. Evolving market forms present opportunities for commodity groups to undertake new roles, including advocating for changes in contract law and facilitating collective bargaining. Commodity groups may act as intermediaries to bring together supply chain participants for negotiations over contract terms. Further research is needed to address the questions of (1) the conditions under which collective bargaining is appropriate, (2) who would undertake it, and (3) current institutional and legislative obstacles to collective bargaining in the United States and Canada.

Educating producers about negotiating and evaluating contracts will become an increasingly important extension of the public sector education and training function. For some commodities, traditional arguments for public investment in research and development may become less relevant. Issues of market power will continue but will raise new questions, such as vertically related oligopolies’ increase in importance.

The agricultural sector will be well served by evaluations of current and future market developments that are pragmatic, while at the same time, seeking to safeguard the legitimate interests of market participants. In this regard, agricultural economists need to reevaluate their traditional preference for a particular form of farm and market organization for agriculture. The perfectly competitive ideal does not describe the market reality in which the agri-food sector operates, given the extent of product differentiation, information asymmetries, and transaction costs. Ronald Coase points out that

> contemplation of an optimal system may provide techniques of analysis that would otherwise have been missed, and in certain special cases, it may go far to providing a solution. But in general its influence is more pernicious. It has directed economists’ attention away from the main question, which is how alternative arrangements will work in practice. It has led economists to derive conclusions for economic policy from a study of an abstract of a market situation. (Williamson, p. 327)

Agricultural economists should take note of Coase’s advice to evaluate how these arrangements work in practice in order to advise policy makers and industry associations on the host of questions presented by increased vertical linkages in the agri-food sector.

Acknowledgments

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Endnotes

1 Transaction costs include: ex ante search costs in obtaining information about product prices, qualities, evaluating potential buyers and sellers, etc.; negotiation costs incurred in physically carrying out a transaction (e.g., drawing up contracts, middlemen fees); and the post-exchange monitoring and enforcement costs of ensuring that the terms of the transaction are met.

2 A supply chain consists of the relationships between agents involved in the production and delivery of a good to consumers, including producers of primary products, manufacturers, and retailers.

3 The likelihood depends on the characteristics of the relationships between agents involved in the production and delivery of a good—costs of vertical integration, ex ante search costs in obtaining information about product prices, qualities, evaluation of potential buyers and sellers, etc.; negotiation costs incurred in physically carrying out a transaction (e.g., drawing up contracts, middlemen fees); and ex post monitoring and enforcement costs of ensuring that the terms of the transaction are met.

4 For example, Martinez highlights some of the efficiency gains in the U.S. broiler industry that can be attributed to closer vertical coordination. Farm production costs declined with the adoption of cost-reducing technology, facilitated by the use of production contracts. Market efficiencies were gained from vertical integration of the feed, hatchery, processing, and feeding stages. With tighter control over volume and quality, the industry was able to meet consumer needs for high-quality, convenient, and branded products and meet the needs of large scale supermarket chains and restaurants.

5 See Lang for an insightful discussion of this issue and an examination of how collective bargaining altered the incentive structure of various buyer–supplier relationships, leading to a change in behavior.

References


