Market Structure and Competition in the US Food Industries
Implications for the 2012 Farm Bill

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Introduction

Major structural changes influencing US agricultural markets include increasing consolidation at all stages; expanding vertical coordination of markets by large input-providing, processing, and retailing firms exercised through contracts and vertical integration; diminished reliance on traditional spot markets for exchange of farm products; and a growing emphasis on product differentiation and increasingly broad dimensions of product quality. These changes apply to upstream markets for the provision of inputs into farm production and to downstream markets for processing and distribution. None of these changes are consistent with the tenets of traditional...
models of competitive agricultural markets that have underpinned most agricultural policy analysis, and they collectively raise the question of what role, if any, competition policy should play in the 2012 Farm Bill. This paper evaluates these evolving market forces and considers the importance of market power as a factor influencing behavior in the food industries. Finally, in light of this analysis, competition policies likely to be considered in the 2012 Farm Bill are evaluated.

The paper's major findings are as follows:

• No clear empirical evidence exists to link substantial increases in food manufacturing and retailing concentration to significantly lower farm prices and higher consumer prices. Consolidation has, however, improved market efficiency.

• Processing and retailing firms' overarching incentive to maintain a steady long-run supply of farm production to operate their facilities at full capacity motivates them to pay competitive prices and not exploit short-term market power.

• Modern food markets increasingly demand product quality in a wide variety of dimensions. Vertical markets from farm to retail have become increasingly coordinated, mostly through contracts, as a means to surmount information problems and meet consumers' evolving quality demands.

• Policies to restrict contract provisions, such as the proposed Grain Inspection, Packers, and Stockyards Administration (GIPSA) regulations, are likely to be counterproductive because they would inhibit markets' ability to provide value-adding product characteristics.

• Imposing uniformity in procurement practices under the guise of preventing discrimination, as suggested in the proposed GIPSA regulations, will not necessarily raise prices paid. Instead, such regulations could cause lower payments to efficient producers and those able to meet prescribed quality standards.

• Proposed GIPSA regulations that limit the choice of procurement methods in livestock are also problematic. The evidence regarding the efficiency-enhancing impacts of vertically coordinated procurement mechanisms is strong. Both producers and consumers benefit from these efficiency gains.

• The preponderance of contract exchange and concomitant contraction of cash markets presents significant concerns about price discovery in some markets.

• The introduction of transgenic (genetically modified) seeds has led to dramatic increases in concentration in seed markets for key crops such as corn, cotton, and soybeans, raising concerns of market power and leading to calls to rein in the marketing policies of innovating firms such as Monsanto. Competition policies directed at the seed sector should be guided by the objective of maximizing aggregate private incentives to innovate in the transgenic arena.

• A dairy supply-management program proposal has been introduced in both houses of Congress and is a candidate for consideration in the 2012 Farm Bill. Such restrictions would increase consumer prices and diminish US competitiveness in dairy products in the world market.

Key Trends in the Structure of US Agricultural Markets

Three structural characteristics in the evolution of food markets must be taken into account in discussions about competition and competition policy: market concentration, product differentiation and quality, and vertical coordination and control.

Market Concentration. The US food industry is highly concentrated at both the retail and processing stages, and concentration is rising over time.1
Domestic mergers and acquisitions in the food sector, which doubled between 1990 and 2002,² have been a major force contributing to increasing concentration. The average four-firm concentration ratio (CR4) in fifteen key food-manufacturing industries (accounting for 41 percent of total food-processing sales) in 2002 was 56 percent, compared with 45 percent in 1982.³ In livestock industries, the Government Accountability Office (GAO) reported a CR4 in hog processing of 63 percent in 2006 compared with 36 percent in 1982, and 79 percent for steer and heifer slaughter in 2006 compared with 41 percent in 1982.


While the focus of anticompetitive behavior in the food sector has been food processors and occasionally farmer organizations, leading grocery retailers have emerged as dominant players in the food market chain. National CR4 in food retailing, only 16.8 percent in 1992, increased almost continually to 35.5 percent in 2005. However, because consumers are distributed geographically and incur significant transaction costs in traveling, retail markets are localized in geographic scope and fit the model of a spatial oligopoly:⁴ In this regard, the average grocery-retailing CR4 in 2006 for 229 metropolitan statistical areas based on analysis of Nielsen Market Scope data was 79.4 percent.⁵

Nontraditional retailers, including supercenters, warehouse club stores, and mass merchandisers, nearly doubled their share of food-at-home expenditures in the United States from 1998 to 2003.⁶ Walmart, the largest supermarket chain in the United States, generates over 50 percent more food-related revenues than its closest direct competitor, Kroger, and has continued to grow at a faster rate than rival chains.⁷

Farm production itself has become considerably more concentrated over time, but individual farmers’ market shares remain minuscule, with the exception of a few specialty-products industries. However, through producer organizations—cooperatives or marketing orders—farmers have occasionally been accused of anticompetitive behavior. This concern has been based not on increasing shares of products marketed through producer organizations, which have been flat or declining,⁸ but rather on a few large cooperatives operating in conjunction with federal marketing orders, most notably the Dairy Farmers of America (DFA).⁹

Although industrial organization research in the food industries has traditionally emphasized food manufacturers’ and retailers’ market power over consumers,¹⁰ focus has shifted to processors’ and, occasionally, retailers’ roles as buyers from farmers. Procurement markets for certain commodities may be localized in geographic scope, so national concentration ratios may vastly understate buyer concentration in local markets for raw agricultural products. A second shift in focus has been to emphasize competition issues in input markets, most notably for seeds, in light of the introduction of transgenic traits into seeds for major crops—corn, cotton, and soybeans—and the resulting dramatic restructuring of the seed industry.

Product and Firm Quality and Differentiation. The dimensions of food quality that consumers value have expanded rapidly. In addition to traditional characteristics such as taste, appearance, convenience, brand appeal, and healthfulness, characteristics of the production process (for example, the use of chemicals, sustainability, physical location, or confinement conditions of animals) and the environmental implications of producing and consuming the product also matter to some consumers. Heterogeneity among consumers’ preferences has created opportunities for product differentiation and exploitation of market niches by both farmers and marketers. In this environment, policies that diminish firms’ abilities to provide desired quality attributes and differentiate their products are counterproductive.
Most farms and marketers do not sell directly to consumers, but instead sell to market intermediaries who transmit information regarding consumer demands upstream and introduce additional considerations relating to their own preferences. Transactions in the food sector have accordingly become more complex, requiring increasing vertical coordination. A firm’s “quality”—in terms of its ability to produce or market products to satisfy the requirements of a supplier sought by downstream buyers—has assumed increasing importance. For example, grocery retailers seek suppliers who can provide products reliably year-round, across an entire category, and in volumes necessary to meet their needs, and who can also provide ancillary services such as category management, third-party product-safety certification, and electronic data interchange. The ability to meet the characteristics sought by downstream intermediaries often relates to the size or scale of the seller, which contributes to the trend toward increasing firm size and concentration.

**Vertical Coordination.** Increasing vertical coordination and use of production and marketing contracts to organize exchange across the stages of the food market chain is another key structural trend and a source of much controversy. Vertical coordination ranges from essentially none in open-market transactions to complete control in the case of vertical integration. Contracts represent intermediate levels of vertical coordination. Their use is increasing, as is the degree of control exercised through them. MacDonald and Korb reported that contracts governed 39 percent of US agricultural production in 2003, up from 28 percent in 1991 and 11 percent in 1969. Contract exchange dominates dairy, livestock, and some crops (for example, sugar beets and tomatoes for processing).

Control in food-industry contracts is almost always exercised by the downstream trading partner restraining the behavior of upstream suppliers in terms of varieties produced, inputs used, and other factors. Despite having a clear efficiency rationale, close vertical coordination between farming and downstream marketers is controversial because of its implications for the economic freedom of farmers, the exercise of buyer market power, and the survival of traditional family farms. Policies have increasingly been focused on regulations and legislation to prescribe certain coordination practices.

The livestock sector has been most widely studied and scrutinized with respect to these trends. Over 95 percent of all broiler production is marketed through vertically coordinated chains, with 88 percent marketed through resource-providing production contracts, wherein growers do not own the live birds and their ability to act independently is severely proscribed.

The share of cattle marketed under vertical coordination doubled between 1980 and 1998 from about 10 percent to more than 20 percent. Slightly more than one-fourth of slaughter cattle come from long-term contracts and marketing agreements, and packers directly fed another 5 percent in 2002. By 2008, negotiated cash procurement accounted for only 44 percent of cattle transactions.

Vertical coordination in the pork industry has proceeded more rapidly than in the cattle. By 2000, 78 percent of hogs were produced under contracts or were packer owned, and by 2008 only about 10 percent of hogs were procured through negotiated cash contracts. Current percentages (from the USDA Agricultural Marketing Service mandatory price reporting) are even lower—in the range of 3–5 percent. Hog production is increasingly controlled through production contracts, following the model of broilers.

Contracts and other forms of vertical control can surmount information problems in markets that affect product quality. By controlling key inputs, downstream firms address moral-hazard issues that would otherwise diminish product quality and increase food-safety concerns. Contracts can also specify and reward quality standards and thereby address adverse-selection problems that might be caused by failure of the open market to adequately recognize and reward quality.

However, contract production may exclude small producers, leading to further consolidation in the farm sector and undesirable changes in the rural landscape.
The increasing incidence and scope of the vertical coordination mechanisms in livestock, along with the rapid increase in processing concentration, have led producers and feedlot operators to be concerned about the competitive impacts of these arrangements. Contract prices are often tied to cash-market prices, raising concerns of price suppression to farmers. One issue is that contracts are awarded to producers of the highest-quality animals, leaving lower quality to be transacted in the spot market. Thus, the base price in contracted cattle reflects below-average quality. Although quality premiums in these contracts can address this concern, the question is whether they are sufficient to compensate for the low base price. Another concern is that processors’ incentives to bid in the spot market are attenuated if the costs of cattle already committed to the processor through a contract are affected by the competitiveness of the bidding. Empirical research has found a persistent but small negative relationship between cash cattle prices and the percentage of deliveries from captive supplies.

Does the Food-Marketing Sector Have a Market-Power Problem?

The processing sector in many US food industries fits a prototypical oligopoly/oligopsony structure based on the presence of a few large firms, perhaps a fringe of smaller competitors, and substantial barriers to entry in the form of sunk assets—highly capital-intensive and specialized plants and equipment with little value in an outside use. Moreover, the same leading firms interact repeatedly both as buyers and sellers over time and across regions, and thus opportunities to learn to cooperate, at least tacitly, are manifest.

Food retailing has an oligopoly structure as well. However, the emergence of discount retailers such as Walmart and the aggressive use of price promotions as a marketing tool to attract consumers to the stores suggest relatively healthy price competition in food retailing. Food prices charged by nontraditional retailers are 5–25 percent lower than prices charged at large supermarket chains. Discount retailers also prompt lower prices from their rivals. Volpe and Lavoie found prices to be 6–7 percent lower among traditional retailers in New England when they faced competition from Walmart.

Retailers’ power as buyers from shippers and manufacturers has received comparatively little attention. Large food manufacturers with prominent brands are likely able to countervail any retailer buying power, but shippers of fresh produce, private-label manufacturers, and manufacturers with weak brands lack similar power. One reason discounters have been able to offer lower consumer prices is through negotiating very favorable deals with suppliers using their volume purchases as leverage. The retailers’ desire to transact with only a few major marketers in each product category may restrict shelf-space access to others, stimulating further concentration in food manufacturing and constituting a potent barrier to new product innovation and entry.

The Empirical Evidence. In recent decades, considerable research has investigated market power in specific agricultural industries using the methods of the new empirical industrial organization (NEIO). Studies have examined food-marketing firms’ oligopsony power over farmers, oligopoly power over downstream buyers, or in some cases both. The red-meat processing industries have been a key focus in a number of studies. Despite the high and rising levels of processor concentration in these industries, most studies found small departures from competitive pricing on either the selling or buying side of the market. Other empirical studies found that efficiency gains from consolidation dominated any losses from market power.

Broader surveys of the NEIO research on US food industries generally have reached a similar conclusion. The GAO, in responding to congressional concerns about concentration in the food sector, summarized its findings as follows: “The empirical economic literature has not established that concentration in the processing segment of the beef, pork, or dairy sectors or the retail sector overall has adversely affected
commodity or food prices. Most of the studies that we reviewed either found no evidence of market power or found efficiency effects that were larger than the market power effects of concentration.”

Market intermediaries with rather modest amounts of market power can capture large shares of the benefits from policies intended to support farmers.

However, there is much reason for caution in interpreting these results. The NEIO methodology has been subjected to some rather serious criticisms in general, and with respect to applications to the food industries. Sexton argued that these limitations tended to bias analyses against finding market power. Moreover, many of the NEIO analyses of food-industry market power were conducted in the 1990s and examined data going back to 1970 or even earlier, predating crucial increases in concentration that have been the basis for much of the contemporary policy concern.

Reconciling the Structural Evidence with the Empirical Results. We have food industries that are structural oligopolies/oligopsonies with high barriers to entry and ample opportunities for firms to obtain cooperative outcomes through repeated interactions. Reports by farmers of limited competition among processors are widespread and have provided the impetus for policy concern at the national and state levels regarding competition. Yet an extensive empirical literature finds little market power. What conclusions can we draw?

The explanation that we favor to reconcile the evidence focuses on the capital-intensive processing technologies that require a sufficient and continuous supply of raw material to operate efficiently. In the words of the GAO, describing hog processing: “Large processing plants achieved cost economies by ensuring a smooth and undisrupted flow of hogs so they could operate their plants at near full capacity. Therefore, their desire to continue purchasing hogs to achieve these cost savings could overwhelm any incentives to exercise market power by restricting purchases.”

The extensive study of marketing practices in the livestock and red-meat industries funded by GIPSA through a 2002 Farm Bill mandate reached a similar conclusion regarding meat-processing plants: “When both are operating close to capacity, smaller plants are at an absolute cost disadvantage compared to larger plants. When larger plants operate with smaller volumes, they have higher costs than smaller plants operating close to capacity and, thus, have incentive to increase throughput. For all plants, large and small, average total cost increases sharply as volumes are reduced.” Similar conclusions are likely to apply to other capital-intensive food-processing industries.

Food processors have a strong incentive to maintain a stable supply of raw product to enable their plants to operate near capacity, but they have no incentive to compete to obtain supply beyond what they can process efficiently. This characterization is fully consistent with farmer complaints regarding an absence of competition among processors to procure their products.

Given this apparent lack of competition among processors to procure raw product, processors in many cases have significant short-run monopsony power over producers with whom they regularly do business. Moreover, short-run supplies are likely very inelastic for most commodities, creating the potential for a large price markdown below a product’s marginal revenue product. However, such an exercise of monopsony power by a processor would drive returns to its suppliers below the competitive or ‘normal’ level, causing resources to exit the industry in favor of other farm products or nonagricultural pursuits—an outcome inimical to the processor’s goal of maintaining a stable supply of the farm product. The very inelastic short-run supply becomes very elastic in the long run, and short-run monopsony markdowns are not consistent with a long-run profit-maximizing strategy, especially considering processors’ sunk investments in long-lived processing facilities.
Rather, a processor has strong incentive to ensure that its suppliers earn a return sufficient to maintain their resources in production and ensure a stable supply of product to the processor’s facilities.

What Are the Consequences of Market Power in the Agricultural Sector? The empirical evidence and a long-run dynamic perspective on competition each support the conclusion that market-power abuses in most food industries are likely to be relatively minor. Efficiency losses from modest departures from competition in the food-marketing sector are small. For a small departure from competition, the deadweight-loss triangle is small, in the limit infinitesimally small. Moreover, oligopsony power matters for overall market efficiency only to the extent that the farm input matters as a factor in producing the final product. The farm share as a fraction of the US food retail dollar is now less than 20 percent on average, meaning that oligopsony power is almost surely inconsequential as a source of overall economic inefficiency.

Agricultural policy, however, is about distribution of economic surplus, and the distributional consequences of modest market power are much greater than the pure efficiency consequences. Any market power that causes input and output in the market to decrease raises prices for consumers and reduces prices for farmers, expanding the height of the processor-marketer profit rectangle and generating concomitant reductions in consumer and producer surplus. Market intermediaries with rather modest amounts of market power can capture large shares of the economic surplus generated from a market and large shares of the benefits from policies intended to support farmers. Thus, even modest market power cannot be ignored from a policy perspective due to its significant distributional impacts.

Input Markets and Competition Issues in the Seed Sector

Competition issues in agricultural input markets have come to the forefront with the introduction of transgenic seeds (seeds genetically modified [GM] to contain certain desirable input or output traits) in the mid-1990s and a series of favorable court decisions that conferred strong patent protections on those innovations. Although seeds have appropriately been the major focus for competition concerns on the input side, input markets have also changed in general as a consequence of the evolutionary forces at play in the food industry (such as vertical integration and increased demand for quality characteristics). Regulatory burdens have also increased, especially vis-à-vis the use of herbicides and pesticides, and crop-specific product requirements have become highly specialized because of geographical differences in environmental regulations, weed and pest pressures, and the types of protections provided by transgenic seeds.

This situation creates the potential for lock-in problems and opportunistic behavior. Some levels of protection to farmers are provided by the often-repeated nature of these interactions and opportunities for aggregate buying and bargaining power through cooperatives or processors in the form of resource-providing contracts. Nonetheless, competitive implications are seldom considered when a hodgepodge of local and regional environmental restrictions and regulations are established.

Transgenic seed varieties accounted for 85 percent, 88 percent, and 91 percent of all US corn, cotton, and soybean acres planted, respectively, in 2009, and these three crops accounted for the vast majority of the over 150 million acres of GM crops planted in 2009. These traits have been developed and marketed by a small number of companies, including Monsanto, DuPont, Syngenta, Dow, and Bayer, with Monsanto acquiring an increasingly dominant position. Moschini calculates that in 2009 one or more Monsanto GM traits were present in 81 percent, 79 percent, and 95 percent of US acreage for corn, cotton, and soybeans, respectively.

As a result, concentration in the seed markets for corn, cotton, and soybeans has increased rapidly, with innovators of transgenic traits having moved to acquire seed companies and thereby access their
germplasm and marketing channels. Monsanto was not a seed producer before the biotechnology revolution, but it is now the largest seed producer in the world. In addition to its vertical integration into seed production, Monsanto has also in some cases licensed its traits to independent seed sellers, with the threat of self-production representing an effective bargaining tool in setting favorable licensing agreements.

At one level the competition-policy issue is framed quite simply: the need for society to incentivize innovators by preserving the property rights to their innovations, while also providing a means for competition and lower prices for consumers to eventually emerge. The extant legal framework of patent law reflects, presumably, society’s preferred balance between supporting innovation and opposing monopoly power.

Any policies intended to alter this balance in favor of competition and at the expense of protections of intellectual property rights must be approached with great caution. Private expenditures on research and development (R&D) in agriculture have exceeded public expenditures since the 1980s, and the trend toward reduced public support for agricultural R&D is unlikely to abate. Pardey, Alston, and Piggot point to signs of a global slowdown in agricultural productivity and lay the problem at the feet of reduced support for agricultural R&D. At a time when society demands ever more from agriculture in terms of providing both food and energy for a growing world population, preserving private incentives to innovate has perhaps never been more important. Although definitive studies of the breakdown in benefits from innovations in transgenic seeds are lacking, it seems clear enough that, although the innovators have succeeded in capturing a large share of the benefits, consumers and farmers have also benefitted.

A macro policy prescription in support of preserving private incentives to innovate is not, however, incompatible with recognizing that specific actions taken by a firm to preserve and extend its patent protections may be inappropriate and might stultify other firms’ incentives to innovate. Moss and Moschini summarize some of the allegations made against Monsanto, such as exclusionary dealings, in terms of its contractual arrangements with licensees and seed distributors. Moschini also discusses actions Monsanto is putting in place in essence to extend de facto protection for its Roundup Ready trait in soybeans, for which the last controlling patent is set to expire in 2014.

Moss argues that Monsanto’s dominant position with respect to GM traits is diminishing innovation in this arena. Her argument is that “interplatform” competition, rivalry between transgenic seed platforms, is unrealistic due to Monsanto’s dominant position as the only firm possessing a full suite of stackable traits. “Intraplatform” competition requires rival firms to have access to the dominant platform and thus opportunity to introduce their own innovations to the extant platform. Moss, who ascribes a “gatekeeper” role to Monsanto, argues that its dominant position has created a disincentive for other firms to innovate, and points to various measures of declining innovative activity in the transgenic arena to support this position. Such concerns deserve careful scrutiny and, if specific policy is required outside the realm of existing antitrust laws, it should be guided by the objective of maximizing aggregate private incentives to innovate in the transgenic arena.

**Competition Issues in Recent Farm Bill Legislation**

Competition issues were debated in both the 2002 and 2008 Farm Bills. A competition title for inclusion in the 2002 Farm Bill was ultimately deleted by the Senate Committee on Agriculture. However, several “competition” amendments that focused on livestock and poultry procurement markets were included in both bills.

The 2002 Farm Bill debate included a serious effort to amend the Packers and Stockyards Act (PSA) to prohibit packers from owning livestock and hogs that they were to slaughter. The Senate approved adding language to the PSA making it unlawful for packers to “own, feed, or control livestock intended for slaughter (for more than 14 days prior to slaughter and acting through the packer or a person...
that directly or indirectly controls, or is controlled by or undue common control with, the packer."

Opponents feared that a literal interpretation of the term “control” could exclude any contractual or growing arrangements. Although the language was amended to exclude forward contracts, marketing agreements, and other noncash sales agreements where packers did not have direct management over the operation raising the livestock, the packer-ownership subsection did not survive the Congressional Conference Committee on the 2002 Farm Bill.

Lawsuits challenging the contracting and marketing practices employed by large packers precipitated discussion of several “competition enhancing” provisions for inclusion in the 2008 Farm Bill. A restriction on packer ownership was again considered, included in the Senate version of the bill, excluded from the House version, and, ultimately, excluded from the bill itself. Approval was given, however, to extend mandatory price reporting for livestock and to expand the interpretation of the PSA to include more concrete definitions of violations to facilitate increased regulation and prosecution. The 2008 bill mandated that the Secretary of Agriculture promulgate additional regulations with respect to the PSA to:

- establish criteria that the Secretary will use in determining – 1) whether an undue or unreasonable preference or advantage has occurred in violation of the Act; 2) whether a live poultry dealer has provided reasonable notice to poultry growers of any suspension of delivery of birds under a poultry growing arrangement; 3) when a requirement of additional capital investments over the life of a poultry growing arrangement or swine production contract constitutes a violation of the Act; and 4) if a live poultry dealer or swine contractor has provided a reasonable period of time for a poultry grower or swine production contract grower to remedy breach of contract that could lead to termination of the poultry growing arrangement or swine production contract.

Proposed regulations were issued by GIPSA in June 2010 under this mandate and subjected to extensive commentary, both for and against, during the prescribed comment period. When passing the 2012 Agricultural Appropriations Bill, Congress stripped much of the content out of the proposed regulations by stipulating that GIPSA could use funding only to implement the provisions specifically outlined in the 2008 Farm Bill. Given the extensive debate and the strong opinions expressed on the proposed regulations ultimately eliminated from the GIPSA rules, it is likely that several of these items will be reconsidered in future Farm Bill deliberations.

### Competition Issues and the 2012 Farm Bill

One guide to the competition policy options that may be proposed in the 2012 Farm Bill consists of the competition issues that have been considered in recent farm bills but ultimately were excluded. A second guide consists of the competition issues currently on the policy debate front burner and in discussions such as the joint USDA-US Department of Justice (DOJ) Workshops on Competition and Concentration held at various locations during 2010. Competition issues in livestock and poultry procurement will likely be prominent in the discussions leading up to the 2012 Farm Bill, as may supply-control proposals for the dairy industry.

#### Limitations on Meat-Packer Procurement Methods.

Interest in packer ownership of live animals is ongoing and intense. Packer ownership of cattle as a share of total procurement is small and stable over time, while the use of other captive-supply arrangements is on the rise. Packer ownership for hogs is somewhat higher and on the increase. Economic analysis shows the benefit of including vertical integration (packer ownership of cattle) in the menu of procurement options in terms of reduced transaction costs, attainment of an optimal quality mix of animals, and operating plants at efficient capacity.
The main arguments for banning packer ownership are that the practice attenuates incentives to bid on the spot market (due to self-supply filling part of packing needs); causes spot markets to be thinner, creating potential for manipulation; and facilitates packerto-packer sales, which by revealing prices can be a collusive device. Restricting or eliminating packer ownership would likely result in packer-owned animals being replaced by animals procured through other forms of captive supplies, so the arguments about the spot market seem irrelevant. Moreover, it is not packer-owned livestock, but livestock procured under contracts tied to the spot price, that can soften competition in the spot market and reduce prices; directing supplies from packer ownership to alternative captive-supply forms is not likely to enhance competition and may have the opposite effect.

Proponents of limitations on packer procurement methods believe that a vigorous spot market is the best transactions mechanism to ensure that producers receive a fair price. Mandating minimum purchases in the spot market has thus been promoted as a direct tool to further this objective. H.R. 5247, proposed as part of the 2002 Farm Bill, would have required covered packers to procure 25 percent of their livestock through spot-market purchases (defined as transactions made within seven days of slaughter and having a firm base price set at the time of agreement) from nonaffiliated producers (12.5 percent in the case of covered cooperatives). This provision was not included in either the 2002 or 2008 Farm Bills, but proponents continue to argue its merits (for example, in S. 460, 2009).

The same arguments about the efficiency implications of restricting transaction choices apply to this provision as well. Given the great importance in cattle and hog processing of operating plants at capacity, the cost consequences of regulations that impede this outcome can be severe. Simply moving transactions from captive-supply arrangements to spot exchanges need not improve price because both supply and demand are increased, meaning the net price impact is determined by the relative elasticities of supply and demand. Wohlgenant has recently provided econometric evidence for hogs that moving packer-owned hogs to the spot market would reduce the spot price by about 7 percent. Many producers voluntarily select contract sales as a way to reduce risk, ensure reward for product quality, improve supply management, and obtain better prices, making it likely that some producers “forced” into the spot market under a minimum-purchase requirement would be unhappy.

Thus, regulations that limit the choice of procurement methods in livestock or other industries are problematic. The evidence regarding the efficiency-enhancing impacts of vertically coordinated transactions is strong. Under even partial price transmission, producers and consumers benefit from these efficiency gains. For these arrangements to have anticompetitive effects, there must be a base of oligopsony power that such arrangements can facilitate or extend, as shown by Xia and Sexton and Zhang and Bronsen.

But the concerns about price discovery in these industries, if cash markets continue to decline in importance, are valid. This issue is important, given that many contracts base their pricing on the spot market. Many agricultural industries succeed in “discovering” farm prices without the benefit of a spot market by bargaining, pegging contract terms to the price paid by a marketing cooperative in the industry, or pegging terms to a futures contract or a transparent downstream price. Livestock lacks the first two pricing instruments, but the latter two may be better pricing tools and less subject to manipulation than increasingly thin and distorted cash markets.

Regulating Contract Provisions. Regulation of contract exchange in livestock seems certain to arise in the 2012 Farm Bill debates. An ongoing debate on this subject has emerged through the new regulations of livestock procurement proposed by GIPSA in response to the 2008 Farm Bill mandate.
Some in Congress have claimed that the USDA has overstepped the boundaries of its authority under the PSA and its 2008 Farm Bill mandate, and the 2012 Farm Bill could be viewed as an opportunity for Congress to reassert its authority.

The proposed regulations specify permissible contract terms, mandate all nonunique contracts be filed and disclosed as samples, and classify specific processor and packer actions as retaliatory. They also preclude animals from being transferred from one packer to another and prohibit dealers from simultaneously purchasing on behalf of more than one packer.

The USDA has long maintained that the PSA can be violated “without proof of predatory intent, competitive injury, or the likelihood of injury,” despite court rulings that have applied conventional antitrust standards in evaluating conduct alleged to violate the PSA. The proposed regulations eliminate the need to prove actual or potential competitive injury to establish a violation of the PSA, instead defining a competitive injury as occurring “when conduct distorts competition in the market channel or marketplace.”

The proposed GIPSA regulations also require uniformity of animal procurement practices. Section 201.210(a)(5) prohibits the “paying of a premium or applying a discount on the swine production contract grower’s payment or the purchase price received by the livestock producer from the sale of livestock without the reason(s) and substantiating the revenue and cost justification associated with the premium or discount.” Section 201.94(b) requires that processors “maintain written records that provide justification for differential pricing or any deviation from standard price or contract terms offered to poultry growers, swine production contract growers, or livestock producers.” With regard to poultry specifically, the regulations expand the scope of the PSA by regulating settlement groups and base pay amounts in tournament pay systems and limit processor influence on grower capital investments.

The goal of the USDA in promulgating these regulations, in the words of Edward M. Avalos, undersecretary for marketing and regulatory programs, is “to improve fairness and transparency in marketing of livestock and poultry. . . . What is driving the need to use [GIPSA’s] authority under the Packers and Stockyards Act is our concern about the loss of farmers and the depopulation of rural America.”

The proposed GIPSA rules and all restrictions on contracting and vertical coordination practices must be evaluated in light of the previous conclusions regarding the importance of market power in the livestock industries, the need of processors to economize on transaction costs, and the demands of consumers for high-quality and differentiated products. If market power is not a major factor, then the motivation for the various marketing arrangements at issue is either to enhance efficiency by improving information flows and reducing transactions or to offer appropriate incentives to address adverse selection and elicit desired product quality attributes. The efficiency gains to contract production of hogs on the order of 20 percent found by Key and McBride indicate the prospective importance of these contracting benefits. Regulations that impede achieving these objectives will, under the ordinary transmission of cost and price changes through the marketing channel back to the farm or ranch, reduce farm prices and producer welfare on net, outcomes inimical to the USDA’s stated goal.

Imposing uniformity in procurement practices under the guise of preventing discrimination will not necessarily succeed in raising prices paid to those now receiving less. Instead, such regulations could cause lower payments to efficient producers and those able to meet prescribed quality standards. In the parlance of economic theory, such uniformity constitutes an inefficient pooling equilibrium. Thus, the most productive ranchers and contractors would have incentives to exit these industries in favor of activities that would fully reward their abilities—a classic response to an adverse selection problem.

The argument among proponents of the regulations is that they do not prohibit differentiated payments, but only require that they be justified. Any such justification can and likely would be disputed, causing many to view the regulations as an invitation to litigate and certainly creating ample incentive for packers to severely restrict, if not eliminate, the use of alternative
marketing arrangements. The regulations create a clear incentive for packers to dramatically increase packer ownership of livestock, wherein they could manage their supplies beyond the reach of the regulations.

**Producer Organizations and Competition Policy in Dairy.** In the midst of significant debate regarding competition policy, producer organizations such as federal marketing orders and cooperatives have remained mostly below the radar. The main controversy regarding marketing orders has been the use of volume regulations, but few marketing orders today have active programs to manage supply. However, agricultural marketing cooperatives have attracted attention for alleged antitrust violations. In recent suits, the DFA is alleged to have conspired with processors to fix and suppress prices paid to farmers.73

The Capper-Volstead Act of 1922 grants limited antitrust immunity to marketing cooperatives, and the swirl of antitrust litigation has led to concern that the Capper-Volstead protections could be scaled back.74 These concerns were elevated greatly when Christine Varney, assistant attorney general in charge of the DOJ Antitrust Division, stated that Capper-Volstead “might not be the right law for the state of the industry at this time.”

However, US secretary of agriculture Tom Vilsack communicated that agricultural cooperatives and Capper-Volstead were not included in the administration’s increasingly stringent antitrust enforcement focus.75 At the USDA-DOJ listening session in Madison, Wisconsin, in late June, Varney herself stated, “We understand co-ops are essential to the livelihood of producers,” and “[the DOJ] is supportive of the mission of cooperatives and the Capper-Volstead Act.”76 As markets become more concentrated, cooperation is a tool in the producers’ arsenal to combat downstream market power when it is encountered. Given the vast array of federal and state policies and programs intended to improve returns to farmers, it seems incongruous with this broader policy objective to attack organizations designed to improve farmer returns.77 The concern of “undue price enhancement” by overly powerful cooperatives has never been documented empirically over the life of the Capper-Volstead Act.

Another relevant competition consideration for dairy, an industry-promoted dairy supply-management program, has gained traction to the point where it has been introduced in both houses of Congress and is a candidate for consideration in the 2012 Farm Bill. The Dairy Price Stabilization Program Act of 2010 (H.R. 5288 and S. 3531) amends the Dairy Production Stabilization Act of 1983 by establishing a supply-management program. The proposed legislation imposes a tax known as a “market access fee” on the entirety of a farmer’s production if it exceeds the farmer’s eligible base. Funds collected under the program would be rebated to producers who do not exceed their eligible base. New entrants into dairy farming would have to pay the market access fee on their production. Thus, the proposed policy has industry incumbents taxing entrants and distributing the revenues among themselves. The supply restrictions would increase consumer prices for a staple food. Further, the proposal contains provisions that would diminish the US industry’s competitiveness and ability to export and increase its vulnerability to import competition.78

**Conclusion**

We have discussed the major structural changes influencing competition in US agricultural markets. The trends toward a vertically coordinated and product-differentiated agriculture with fewer and larger firms at all stages seem inexorable. Some get left behind in the midst of such changes, and losing farms can have profound implications for the vitality of rural America. Policies such as those discussed here for livestock and poultry can possibly stem this tide to some extent, but with the consequence of agriculture that is less efficient, less competitive in the face of increasingly open agricultural markets, and less capable of meeting the demands that consumers are placing on the food system.
Notes


5. CR4 represents the statistical index of concentration that has historically been computed and reported by the US Census Bureau, but the statistic has no foundation in industrial organization theory and cannot be used, at least directly, to infer industry conduct and performance.


7. Ibid.


9. The DFA lawsuits involve allegations of monopsony directly, to infer industry conduct and performance.


15. An example is the Mandatory Livestock Reporting Act of 1999, which was passed and renewed on two subsequent occasions in part to bring transparency to “marketing arrangements where neither the arrangements nor the final purchase price are publicly disclosed.” See Azzeddine Azzam, “Market Transparency and Market Structure: The Livestock Mandatory Reporting Act of 1999,” American Journal of Agricultural Economics 85 (2003): 387–95. 

16. Harold L. Goodwin, “Location of Production and Consolidation in the Processing Industry: The Case of Poultry,” Journal of Agricultural and Applied Economics 37 (2005): 339–46. Arguably these contracts are labor-service contracts with the additional feature that a significant capital investment (in the form of growing houses) is required of the grower. Ex ante these growers have substantial alternatives for their labor input, but the capital investment creates an ex post lock-in, which exposes the grower to possible post- contractual opportunism.


34. US GAO, *Concentration in Agriculture*, 29.


36. An alternative procurement model involving seeking raw product on the “open market” at the best price would certainly be dominated (on a transactions-cost basis) by a strategy of procuring on an ongoing basis from a stable group of suppliers.

37. These capital investments represent a credible commitment or “hostage” in exchanges between producers and processors such that each party to the transaction has a significant sunk asset involved—the marketable farm product in the farmer's case and the processing facility in the processor's. The mutuality of this arrangement protects both sides in the transaction from opportunistic behavior. See Oliver Williamson, “Credible Commitments: Using Hostages to Support Exchange,” *American Economic Review* 73 (1983): 519–40.

39. Ibid.


43. Moss claims that, by 2008, Monsanto had acquired up to 65 percent of the market for traited corn and soybeans and about 45 percent for traited cotton. These shares would be only slightly diminished when the overall market is considered, given the aforementioned large shares of GM seeds in these industries. Moschini, however, cites industry sources for somewhat lower shares: a little over one-third for corn and near 30 percent for soybeans, with DuPont being a close second in each case. These national figures may obscure significantly higher concentration in relevant localized markets. See Moss, “Transgenic Seed Platforms: Competition between a Rock and a Hard Place?”; and Moschini, “Competition Issues in the Seed Industry and the Role of Intellectual Property.”


45. For example, an early study by Moschini on benefits to Roundup Ready soybeans indicated that at 1999 adoption rates, the benefit breakdown was 60 percent to Monsanto, 26 percent to producers, and 14 percent to consumers. See Giancarlo Moschini, “Economic Benefits and Costs of Biotechnology Innovations in Agriculture” (Working Paper 01-WP 264, Center for Agricultural and Rural Development, Ames, IA, January 2001).


51. The share of packer-owned cattle slaughter averaged 6.4 percent for 2002–2008 with no discernable trend, according to Ward. Lawrence, Grimes, and Hayenga reported that 9.4 percent of hogs marketed in 1997 were owned by packers. Wohlgenant reported that 19.8 percent of total hogs from 2001–2005 were packer owned for those packers subject to mandatory price reporting. The increase reported by Wohlgenant may largely be due to Smithfield’s acquisition of Murphy Farms in 1999. The entry of Triumph Foods into pork packing in 2006 has increased the incidence of packer ownership in hog production even further. Percentages for 2010 from the USDA Agricultural Marketing Service have been in the range of 25–28 percent. See Clement Ward, “Extent of Alternative Marketing Arrangements for Feed Cattle and Hogs” (Fact Sheet AGE-615, Oklahoma State University, Oklahoma Cooperative Extension Service, Stillwater, OK, 2009); John Lawrence, Glenn Grimes, and Marvin Hayenga, “Production and Marketing Characteristics of US Pork Producers, 1997–1998” (Staff Paper No. 311, Iowa State Department of Economics, Ames, IA, 1998); and Michael Wohlgenant, “Modeling the Effects of Restricting Packer-Owned Livestock in the US Swine Industry,” *American Journal of Agricultural Economics* 93 (2010): 654–66.


53. Hayenga, Schroeder, and Lawrence, “Churn Out the Links: Vertical Integration in the Beef and Pork Industries.”

54. Clement Ward and Ted Schroeder, “Captive Supplies and Their Impacts” (Fact Sheet WF-555, Oklahoma State University, Oklahoma Cooperative Extension Service, Stillwater, OK, 1997).

55. This argument is made by McEowen, Carstensen, and Harl and by GIPSA administrator J. Dudley Butler at a July 20, 2010, congressional hearing on proposed GIPSA rules that would ban such sales. See McEowen, Carstensen, and Harl, “The 2002 Senate Farm Bill: The Ban on Packer Ownership of Livestock.”

57. Another proposal that has been before Congress periodically beginning with the 2002 Farm Bill is to amend the PSA to include a ban on “anticompetitive forward contracts,” which are defined to include agreements that do not have a firm base price, are not offered for bid, or are based on a formula. As Taylor, Muth, and Koontz note, this amendment could eliminate nearly all marketing arrangements and be impractical to enforce. Given the compelling evidence of mutual economic benefits from these alternative marketing arrangements, enacting such a provision could have disastrous consequences. See Justin L. Taylor, Mary K. Muth, and Stephen Koontz, “Background on Proposed Livestock Marketing Agreements Legislation” (Fact Sheet LM-1, RTI International, Research Triangle Park, North Carolina, 2007).


63. Cooperative bargaining has been ruled by the courts to be protected from antitrust claims by the Capper-Volstead Act and often is received rather favorably by processors as a useful tool in price discovery, so it should be considered as a policy option in cases in which buyers are concentrated and spot markets are increasingly thin. See Brent Hueth and Phillip Marcoul, “An Essay on Cooperative Bargaining in US Agricultural Markets,” Journal of Agricultural & Food Industrial Organization 1, no. 1 (2003).

64. Representative David Scott stated: “Many of my constituents, and the constituents of many on this Committee, have expressed deep concerns over these proposed rules, and they fear that they have stepped too far. A number of these provisions had previously been rejected, their amendments on the floor, in the Senate process, and certainly in the farm bill. They were rejected strongly during the last farm bill deliberations. So the question is, why are they here? Is this an end-run around Congress?” See Hearing to Review the Economic Conditions Facing the Pork Industry, Before the House Committee on Agriculture, Subcommittee on Livestock, Dairy, and Poultry, 111th Cong. 2 (2009) (statement of David Scott, chairman of the Subcommittee on Livestock, Dairy, and Poultry).


66. Ibid., 35340.

67. Relevant decisions include Philson v. Goldsboro Milling Co., 164 F.3d 623, No. 96-2542, 96-2631, 1998 WL 709324 (4th Cir. 1998); London v. Fieldale Farms Corp., 410 F.3d 1295 (11th Cir. 2005); Pickett v. Tyson Fresh Meats Inc., 420 F.3d 1272, 1280 (11th Cir. 2005); Been v. O.K. Industries Inc., 495 F.3d 1217 (10th Cir. 2007); Wheeler v. Pilgrim’s Pride Corp., 591 F.3d 355 (5th Cir. 2009); and Terry v. Tyson Farms Inc., No. 08-5577 (6th Cir. 2009).


69. Ibid.

70. The regulations surrounding capital investment requirements also apply to swine contractor growers.


77. The claims made against the DFA and its marketing agency are based in part on DFA’s failure to function in the farmers’ interests. Whatever the merits of this claim, it hardly seems that it can or should be addressed through revisiting the Capper-Volstead Act.