STATEMENT OF KEITH COLLINS
CHIEF ECONOMIST, U.S. DEPARTMENT OF AGRICULTURE
BEFORE THE U.S. SENATE COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON AGRICULTURE, RURAL DEVELOPMENT
AND RELATED AGENCIES
May 17, 2001

Mr. Chairman and members of the Subcommittee, thank you for the invitation to participate in this hearing to discuss concentration in the U.S. food system. All segments of the agricultural sector are undergoing structural change for a wide variety of reasons. I will examine some of the factors contributing to consolidation and concentration in the food production and marketing system and briefly present data on recent structural trends in the food system, including farm inputs, farm production, transportation, processing, merchandising, and retailing. Lastly, I will discuss some of the economic issues that have been raised regarding increasing levels of concentration in the food production and marketing system.

The U.S. food and fiber system, which includes farming and related industries, accounted for 16 percent of U.S. gross domestic product (GDP) in 1999 and employed over 24 million people, or 17 percent of the U.S. labor force. Although farming employs only about 1 percent of the U.S. workforce and accounts for less than 1 percent of total GDP, the contribution of farming to the national economy is much greater because of production agriculture's reliance on other industries for production inputs and for the processing, merchandising, and retailing of the products farmers and ranchers produce. The efficiency of this system has enabled U.S. agriculture to provide an abundant, safe and affordable food supply for U.S. citizens and to be a dominant supplier of food and fiber to the rest of the world's population.

Reasons for Consolidation and Concentration

Consolidation and concentration in the food system refers to changes in the number and size distribution of farms and agribusiness firms and the changing business arrangements farms

and firms make with one another. Structural change is studied because of concerns over the economic and social effects of certain business structures, particularly consolidation of farms and firms. Consolidation of firms into very large production units is sometimes called "industrialization."

Many factors contribute to consolidation and concentration in the U.S. food system. A primary cause is economies of scale. Economies of scale allow larger volumes to be produced at lower per unit production costs, thereby increasing a firm's potential profitability. These economies can take many forms, such as larger and more automated production and processing facilities, reduced overhead costs, and lower distribution costs. Consolidation may also be encouraged by pecuniary economies related to size, such as increased access to capital for research and advertising, volume-based price reductions on production inputs which can lower per unit production costs, or premium prices on large volumes of specific outputs which increase per unit returns. Other factors that can generate consolidation include the exit of firms due to the inability to compete with more efficient firms, the decision of entrepreneurs and providers of capital to seek more lucrative business opportunities in other industries, and government programs, including farm programs, tax provisions, research programs and credit programs. The emerging global economy may contribute to merger activity, as firms try to build on the distribution networks already established by smaller firms operating within countries.

Some have suggested that the slow overall rate of growth in food consumption also contributes to structural change. Slow growth in food consumption may cause firms to look for a competitive edge by offering new products and to expand long-term growth and profitability by increasing and diversifying their product lines through mergers and acquisitions.

An important aspect of structural change is increased "coordination" in the farm-to-consumer chain, which refers to contractual arrangements, alliances, or vertical integration. Consumers are increasingly demanding higher quality food products that offer nutritional benefits, convenience, and taste, rather than simply bulk or homogenous commodities purchased for home meal preparation. Contracting and vertical integration help downstream firms ensure that the commodities produced by farmers and ranchers and processed into food products meet the specific characteristics consumers want and that those products can be provided as needed with minimal inventory costs.

Recent Trends in Concentration

Farm Inputs: Farm Machinery. In 1997, 1,263 establishments produced farm machinery in the United States, delivering nearly $16 billion in products. That compares with 1,576 companies that delivered about $7 billion in products 10 years earlier. The industry consists of a small number of full-line manufacturers that produce complete lines of equipment, including tractors, combines, tillage, and planting equipment, and a large number of smaller firms producing specialized equipment for regional markets. The industry has undergone substantial consolidation for many decades, especially for producers of large equipment, such as tractors. As farming transitioned from horse to machine, numerous tractor manufacturers emerged. The fate of most of these firms paralleled the consolidation in the auto industry with many brand names disappearing as the century unfolded. A significant industry shakeout occurred during the farm credit crisis of the 1980's when farmers sharply reduced farm machinery purchases, leading to a series of mergers, acquisitions, and joint ventures in the industry. By 1986, the top four firms accounted for 80 percent of tractor sales. While no data

are available on the current four-firm concentration ratio–the percentage of market share controlled by the four largest firms–tractor sales continue to be dominated by a few firms.

The number of farm machinery dealers also declined sharply as the number of major manufacturers declined, inventory costs increased, and small dealers could not the afford parts and service departments that larger competitors could provide. In 1997, there were 6,937 farm machinery dealers selling primarily to farmers, but many of these were owned or franchised dealerships of manufacturing firms.

Farm Inputs: Seeds. A major restructuring took place in the seed industry during the 1990s as large, multinational agricultural businesses purchased or formed joint ventures with smaller seed and plant breeding companies. Many of the large companies were chemical or pharmaceutical companies, so acquiring seed businesses appears driven by an effort to complement their existing agricultural chemical businesses and their expertise in molecular biology. The pace of consolidation was rapid and significant in scope. One review of consolidation activity for 1998 found that 10 biotechnology firms were involved in 186 mergers, acquisitions, joint ventures or other collaborations or alliances. A 1999 study by Iowa State University placed the four-firm concentration ratio in 1998 at 67 percent for corn seed, 49 percent for soybean seed, and 87 percent for cotton seed.

During 2000 and 2001, some of these multinational companies spun off or announced plans to sell agricultural divisions. These decisions may reflect ongoing difficulties in the biotech seed industry, such as some consumer resistance, or higher-than-expected development and commercialization costs. Nevertheless, the restructurings that occur are likely to continue to leave the seed industry dominated by a few large players.

Farm production. Rapid consolidation occurred in farm production between 1935 and 1970, as the number of U.S. farms fell by over 50 percent, from 6.8 million to under 3 million. The primary factor contributing to the decline has been increasing mechanization. Mechanical power, larger, more efficient farm equipment, and improvements in farming methods greatly increased labor productivity in agriculture after the mid-1930's. Because of increasing productivity, less labor was needed to produce crops and livestock, allowing farmers to expand the size of their operations. In addition, technological advances in livestock, poultry, and milk production enabled large numbers of animals to be managed in confined operations. Increasing productivity tended to keep returns low especially for those producers who failed to adopt cost-cutting technologies, contributing to the decline in farm numbers. Despite the rapid consolidation in farm numbers, over 90 percent of farms remain family operated.

Over the past decade, farm numbers have stabilized as many farm households have been able to supplement their farm income with income from off-farm jobs. In 1935, the incomes of farm-operator households averaged 40 percent below the average income of non-farm families. In recent years, the average income of farm-operator households has exceeded the average income of non-farm families. In 1999, the income of non-farm families averaged $55,000. The Economic Research Service (ERS) estimates the total income of farm-operator households averaged $64,000 in 1999, with about 90 percent of the income coming from off-farm sources.

While farm numbers have declined over time and a larger share of production is accounted for by an increasingly smaller number of producers, production remains largely unconcentrated for major crops. According to the Census of Agriculture, there were 359,666 farms growing corn for grain; 241,334 farms growing wheat for grain; and 353,566 farms growing soybeans in 1997.

The were 1.011 million farm operations with cattle totaled 1.011 million in 1997. The pace of concentration for cow-calf operations has remained well below that of other livestock and poultry sectors. However, of the approximately 110,000 feedlots in 1997, the largest 2 percent marketed 85 percent of the fed cattle marketed. The four largest feeding firms had annual feeding capacity in 2000 equal to 11 percent of total annual steer and heifer slaughter. In 1997, there were 99,238 dairy, 63,246 poultry, and 102,108 hog farms. In 1997, 3 percent of hog farms accounted for over 50 percent of sales and 3 percent of dairy farms accounted for over one-third of milk sales. Poultry production was less concentrated but 95 percent of the broilers are produced under contract to fewer than 40 firms. While consolidation in hog and poultry production appears to have slowed, the movement to larger and fewer dairy operations continues.

Handling and transportation. Based on data from the Grain Inspection, Packers and Stockyards Administration, market shares of the four largest agricultural export firms ranged from 47 percent for wheat to almost 70 percent for corn in 1998. While the share of total U.S. wheat exports held by the four top firms has remained relatively constant over time, the U.S. corn export market has become more concentrated. The export share for soybeans of the four top firms declined over the period from 1985-98. The changes in aggregate U.S. market share may mask changes at a particular port and the fact that the four top companies for some markets may have changed from period to period. In general, those reporting areas where export volumes are large and growing, such as New Orleans, tend to be less concentrated than reporting areas with smaller and declining volumes. For example, volume exported through the Atlantic Coast reporting area declined by about two-thirds over 1985 to 1998. The number of firms fell to four or less over the same period. Also, over the same period, the volume of soybeans

exported through the Great Lakes reporting area increased by over 123 percent and the share of inspected exports by the four largest firms fell from 100 percent in 1990 to 71 percent in 1998.

Control of storage capacity has implications for export facilities, inland or country elevators, and overseas grain handling facilities. While storage capacity is generally not limited to only a few firms at the national or state level, local markets may be serviced by a limited number of facilities, potentially constraining farmers' storage and marketing options.

At the national level, the four largest firms account for about 27 percent of total elevator capacity. While there is much variation across states, in general, concentration tends to be lowest in those states with the largest off-farm storage capacities. Mississippi, Louisiana, and Arkansas show relatively high concentration ratios partially reflecting the exclusion of rice from the off-farm storage capacity data for these States. Federally-inspected warehouse data also do not reflect volume moving through warehouses, so concentration levels could be higher if the amount of grain handled by the larger firms is proportionately greater than their share of total elevator capacity.

Of all transportation modes, trucking is the least concentrated. While there are a couple of very large truck firms, there are no significant obstacles for entry into the trucking industry. Specialized refrigerated trucks are more problematic, but generally trucking is much less concentrated than most other industries.

There are three major barge lines covering traffic on the Mississippi River System and connecting rivers: American Commercial Barge Lines (ACBL) is the largest, followed by American River Transportation (owned by ADM) and Cargo Carriers (owned by Cargill). These three barge lines own 55 percent of the total covered barges, although there are 32 barge companies in total.

Over the period 1997-99, there have been approximately 30 mergers in the ocean freight industry. The most recent acquisition of Sealand by Maersk gives the new firm a 13 percent market share. The top ten carriers in 1990 had a market share of 33 percent, rising to nearly 50 percent today.

The top five Class I railroads accounted for 57 percent of all Class I railroad grain traffic in 1982, and by 1995, this figure had climbed to 90 percent and then to 96 percent by 1999. In addition, 95 percent of all Class I railroad revenue ton-miles in 1997 were hauled by the five largest railroads, compared to only 75 percent of Class I railroad revenue ton-miles in 1990.

Rail competition is not only a function of the number of available railroads, but also the quality and effectiveness of competitive options from the other transportation modes in particular markets. Although the number of Class I railroads has been reduced since deregulation, some have argued competition may be more intense because the remaining large railroads are stronger and their market reach is greater.

The number of route miles operated by each of the remaining Class I railroads has also increased greatly. Railroad mergers of the 1960's and 1970's combined smaller rail systems which operated in smaller geographic territories. In the 1980's, newly merged systems began to gain dominance within some geographic regions. In 1960, the average Class I railroad in the United States operated 1,956 route miles, which rose to 4,226 route miles in 1980 and to 13,313 route miles in 1998. Today, two large railroads dominate in the western United States, and two large railroads dominate in the eastern United States.

Processing. Concentration in food processing continues to trend upward. The top four firms accounted for about 20 percent of food processing sales in 1997, compared to nearly 12 percent in 1987. The market share of the four largest firms in red meat packing rose from 47

percent in 1987 to over 60 percent in 1998. The four-firm concentration ratio for steer and heifer slaughter rose from 50 percent in 1985 to 82 percent in 2000, but has remained stable since the mid 1990s. The four largest hog slaughter firms accounted for 56 percent of total commercial hog slaughter in 2000, up from 40 percent in 1990 and 34 percent in 1980.

The number of federally inspected hog slaughter plants fell from 1,322 in 1976 to 770 in 1996. USDA's 1996 study, *Concentration in the Red Meat Packing Industry,* found no correlation between regional concentration and price; rather, geographic hog pricing patterns were found to be consistent with a single national market for slaughter hogs. Hogs slaughtered in large plants (those slaughtering at least 1 million head annually) and steers and heifers slaughtered in large plants (at least 500,000 head annually) continue to account for an increasing share of annual slaughter. ERS analyses found that there are economies of scale associated with these shifts in plant size, which suggests lower costs for larger plants and lower consumer prices.

Larger dairy processing firms also account for an increasing share of dairy processing. In 1998, companies with $800 million or more in sales accounted for 69 percent of U.S. dairy sales. The market share of large proprietary dairy companies increased from 39 percent in 1975 to over 42 percent in 1998, while the market share of large U.S. dairy cooperatives increased from 17 percent to 27 percent over the same period.

Mergers and acquisitions have accounted for much of the concentration in the food processing industry. A booming economy appears to have driven the latest wave of consolidation in the food industry. Dairy processors led the number of mergers and acquisitions occurring from 1993 to the first half of 1998. Dairy processors accounted for 69 mergers and acquisitions, meat processors for 60, soft drink bottlers for 53, snack food processors for 44, and poultry processors had 32 mergers and acquisitions. Mergers and acquisitions continued into

2000. Within the 27 food or food related categories tracked by The Food Institute, merger and acquisition activity increased in 18 categories, with activity declining in 6, and remaining unchanged in 3.

Food Merchandising. The food wholesaling sector continues to experience steady growth in sales and concentration through acquisitions. Merchant food wholesalers work with processors to distribute products to retailers and food service establishments. Mergers and acquisitions of the leading general-line grocery wholesalers have resulted in increased concentration. The top four general-line wholesalers accounted for over 40 percent of sales in 1997, up from 26 percent in 1987. Wholesalers that specialize in meat and poultry distribution have also experienced substantial increases in concentration over the past ten years, especially since 1992, while concentration in dairy product distribution has remained stable. As their customer base continues to decline due to rapid consolidation by supermarket chains, many grocery wholesalers continue to acquire retailers. In addition, concentration has also become international in scope as companies from outside the United States acquire U.S. food wholesalers. Both consolidation and international trends are expected to continue.

Mergers and acquisitions in food wholesaling can lead to efficiency gains that reduce costs and provide flexibility to offer more variety to customers within a market region. Furthermore, by growing in a familiar geographic region, a company can gain a better understanding of the consumer. By vertically expanding into retail markets, companies attempt to create synergies that reduce operating costs.

Retailing. Widespread consolidation within food retailing has increased the share of total grocery store sales accounted for by the largest firms. Between 1990 and 1999, the market share of the largest 20 food retailers increased from 39 percent to 52 percent. Much of the

increase in concentration took place between 1997 and 1999 when almost 3,500 supermarkets were purchased, representing $67 billion in sales. Analysis by ERS of the 100-largest U.S. cities found that increases in local market concentration has been moderate. In the 100 largest U.S. cities, the market share of the four largest food retailers rose from 69 percent in 1992 to 72 percent in 1998.

A number of forces have led to food retail consolidation including slow growth in annual grocery store sales, increased spending for prepared foods and meals away from home, and growth of food sales by nontraditional retailers. During the 1990's, grocery store sales, adjusted for inflation, grew about 1 percent annually.

With incomes rising, consumers increased their preference for greater convenience by purchasing more prepared foods and more meals outside the home.

These trends help to promote a competitive food retailing industry.

The expansion of retail food sales by discount mass-merchandise, warehouse club, and convenience stores has provided additional sources of competition for traditional food retailers. Mass merchandisers such as Wal-Mart, Kmart, and Target, and warehouse club store operators such as Costco, Sam's, and BJ's have increased their share of retail food sales from 5 percent in 1992 to 8 percent in 1998, while traditional food stores' share of retail food sales fell from 85 to 80 percent of sales over the same period. Further expansion of mass merchandisers in the retail food business is expected to increase their market share of retail food sales over the next several years.

Increasingly, consolidating retailers are using supply-chain management practices, which are activities coordinated with suppliers that generate operating, procurement, marketing, and distribution efficiencies, to reduce costs. Retailers claim that expected efficiency gains and

lower investment requirements will allow them to maintain profitability and allow them to compete with mass-merchandiser, warehouse club stores, and other potential rivals. Retailers are likely to continue to consolidate through mergers and acquisitions in order to maintain profitability as competition heightens for the consumer food dollar.

Economic Issues Raised by Concentration

Economic growth in an industry involves business formation and expansion, mergers, acquisitions, alliances of various kinds, and exits. These dynamics of change in a market-oriented economy, such as ours, have generally resulted in consumer products more efficiently produced and of higher quality and lower price than otherwise. Nevertheless, economists cite several concerns with concentrated markets.

One issue is the extent to which increasing market concentration reduces competition and increases the ability of firms to exercise market power. Firms with market power are able to capture a larger return by offering consumers higher prices for goods of the same or even lower quality. Such behavior may persist unless other firms emerge to offer lower priced, better products. Likewise, concentrated buyers may depress prices paid to their suppliers below competitive levels and may shift costs to their suppliers by demanding that suppliers provide certain services. In addition, increasing concentration may facilitate collusion or other relationships between firms that inhibit competition, resulting in higher prices being paid by consumers.

An important limitation to market power in any industry are the possible actions of existing competitors, which could include producers of substitute products, and the potential for new competitors. Price distortions and market inefficiency, as reflected in abnormally large returns on investment, can be an incentive for entry of new competitors. Even when

concentration is high, the potential threat of new entrants may prevent firms in a concentrated industry from maintaining high prices.

A second issue is the extent to which increasing concentration reduces product innovation and development. Imitation of new technologies is usually cheaper and quicker than conducting the basic research needed to develop and bring new products to market. In concentrated markets, product improvement may not be as necessary to maintain market share, so firms may not be as inclined to invest in research and product development. On the other hand, increasing concentration does not necessarily mean less investment in research and new products. Increasing concentration may enhance investment in new technologies, since larger firms may be more able to obtain the capital and human resources to fund research and market development programs.

A third issue is the extent to which increasing concentration affects the ability of sellers, such as farmers, to find markets for their products. This issue as been raised with respect to the livestock and poultry industries where some producers have concerns that their ability to independently raise animals and market them in traditional cash markets is declining.

A fourth issue is market transparency. As markets consolidate horizontally and vertically, access to market information could also decline. As information continues to increase in importance as a means to reduce costs and improve decisionmaking, lack of timely, relevant information on market conditions becomes a competitive disadvantage.

Analysis of the effect concentration on the prices received or paid by farmers has been mixed. One broad indication of concentration often cited is the farmers' declining share retail of food expenditures. The farm-to-retail price spread–the difference between the farm value and the retail price of food–rose 5 percent in 1999, reflecting changes in the structure of the food

marketing system, consumer demand for food, along with higher prices for marketing inputs, such as labor and energy. The nominal farm-to-retail price spread for all food products rose 41 percent during the last decade. In real terms, the farm-to-retail price spread for food increased 11 percent over the past 10 years. Higher costs for labor, packaging, energy, transportation, and other marketing inputs pushed the farm-to-retail spread wider, but increases in productivity can partially offset these higher costs. Changes in the cost of these marketing inputs, which are influenced by consumer demand for convenience and other preferences, generally have a greater effect on the retail price of food than do fluctuations in prices received by farmers. However, the relationship between farm and retail prices is more pronounced for food items that undergo little processing, such as fresh fruits and vegetables or fluid milk.

By reducing competition, concentration may result in higher consumer prices and a slower response by retail food prices when farm prices decline. While concentration in food retailing has accelerated since 1996, food-at-home prices, as measured by the CPI for all food-at-home, have fallen relative to the CPI for all items. An ERS study found that additional packing services and new products account for the rising wholesale-to-retail price spread for meats. The study could not attribute the rise in the wholesale-to-retail price spread for meat to increased concentration in the meat packing industry.

As food and agricultural markets have moved from local to regional to national to global, businesses in the food system has moved toward increasing their scale of production. While this evolution can improve coordination within the food chain and the response to changing consumer preferences, the potential for market power increases. This makes enforcement of antitrust laws increasingly important to farmers and consumers. The Grain Inspection, Packers and Stockyards Administration, the Department of Justice, and the Federal Trade Commission

take seriously their responsibilities in merger enforcement actions, price fixing and market allocation, restraint of trade, and other anticompetitive practices.

That completes my testimony. I will be happy to respond to questions.