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Price-Driven Economic Systems on the Way Out?

Wayne D. Purcell

Background

Price has long been at the center of our study of economic systems. Over 100 years ago, neoclassical economists wrote about price and pricing in markets open to any buyer or seller. They believed that prices generated by the interaction of buyers and sellers would allocate resources to the most efficient uses and effectively coordinate functions along the supply chain between producer and consumer. Countless beginning economics students have studied the price-driven systems that Adam Smith had in mind when he described the "guiding hand" that, while invisible, was always there in the marketplace. But as we move toward 2005 and beyond, the price-based systems are being replaced by contracts, written agreements, and various non-price means of coordination and quality control. The growing change is controversial. Every participant along the supply chain, especially the producer of food and fiber products, needs to understand why change is occurring and what the changes will mean to the chances for business success.

Price Driven Systems

For any economic sector to succeed, it must produce and offer something consumers want and are willing to pay for. What the consumer wants changes over time. Modern households often have two wage earners working outside the home. The demand for live chickens in today's on-the-go lifestyle is small. There is no place to slaughter the birds, and few young adults would be willing to do the job even if they had the facilities. Even cutting up a whole bird is a messy, time consuming task. If sufficient income is available, consumers will buy a package of chicken breasts or thighs or some other cut. Some consumers will pay very high prices for the ultra convenient breast filets. I present this extreme scenario as a reminder of how important it is to change what is offered over time to stay aligned with changing preferences of consumers. I would submit that society does not owe the grower of live chickens help in keeping that production alternative viable. And in an era in which Congressional action to regulate the marketplace is being championed, I do not see justification for regulations designed to protect their market just because some producers would prefer to grow and sell live birds.

Basically, if a business firm insists on producing something the modern consumer does not want or need, the firm will eventually go broke. And if a firm is unwilling to adjust and change over time, I would argue it has no justifiable basis on which to turn to Congress for help, especially if the requested help has the possibilities of interfering with the opportunities for other businesses to succeed. Let's keep these thoughts in mind and remember the "live chicken" example when arguments about protecting historical ways of doing things come up.

In a very broad sense, the price system still works. When corn prices look as if they will be higher in the coming harvest than soybeans, some Midwestern farmers will shift acreage from soybeans to corn. In the Delta states, the choice might be between cotton and soybeans. When these crops are all being grown and sold as commodity products where one farmer's corn is exactly like all other corn, farmers may recognize the broad signal that the crop prices are offering. With futures and options traded on most farm products, forward pricing offers an opportunity to establish price for harvest period delivery before the crops are planted. Corn, cotton, and soybean buyers offer cash forward delivery contracts that allow farmers to establish the price that looks more profitable before making the acreage switch. Since enabling legislation in 2000, the private insurance sector is offering price insurance for crops and livestock for which futures are traded. Recent efforts suggest that the Risk

Wayne D. Purcell is Alumni Distinguished Professor, Department of Agricultural and Applied Economics, Virginia Tech.

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Management Agency in the U. S. Department of Agriculture (USDA) will look at the feasibility of price insurance contacts for farm commodities that have no futures to trade such as vegetables, fruits, peanuts, and smaller sectors in the livestock arena such as slaughter lambs.

In a broad and aggregate context, then, price still works and helps in the assigning of resources to alternative uses. Not much coordination and quality control is needed along the supply chain when the commodity is homogenous and separating and maintaining producer identity is not needed. But when the profit incentives move out of the commodity business and to a characteristic that cannot be seen directly by the consumer such as corn with a particular type of protein, lettuce with an enhanced form of a vitamin to boost health, or steaks with guaranteed tenderness, the historic price system is being pushed aside. I want to develop and share some thoughts as to why price-driven systems are being abandoned, what the changes mean to the effectiveness and efficiency of our food and fiber systems, and what it would take to give the price-driven systems an opportunity to compete again as a coordinating and quality control mechanism.

Price Signals

In price-driven systems, price signals become the basis on which consumers communicate to producers. If consumers start to prefer alternative B to alternative C in the produce department, they buy B. The store manager sees the B display emptying. At the same time, C is growing stale on display. The retailer will buy more B and less C. The result is an increase in the price for B, and a price signal in the form of a premium for B is generated. If this premium gets down to farmers so that they can recognize the price signal as a message, they shift resources to B and away from C, and everyone is happy. Consumers get what they want, and farmers have a chance to make a profit by switching to an offering that is commanding a higher price.

This scenario sounds logical and straight forward, but it is not as simple as it appears at first glance. Apparently, some attribute of B or the way it is packaged offers an advantage consumers can recognize and want compared to C, which might be seen as a generic alternative. If B and C are varieties of lettuce, the pricing system cannot attach a price premium to a health-boosting attribute in C if that attribute is not identified, measured, and made a part of price discovery. No matter how much money and effort researchers put into development of new genetics and a superior variety of lettuce C, the price-driven system will not reward producers of this new lettuce. The price-driven system cannot attach a price signal to a product attribute that is not identified and used in describing the product. Thus, C might still be seen by the consumer as a poor alternative to B simply because grades and related information on C are inadequate or obsolete.

Many farm products in the food and fiber sectors are graded by the USDA with someone along the supply chain—usually the processor—paying for the grading service on a user fee basis. When grades are not changed over time to identify attributes the consumer increasingly thinks are important, the pricing system may have no way to communicate changing consumer wants to producers. If that scenario evolves, a policy failure has occurred through a lack of progressive changes in grades. Such a failure in grades and grading policy means, in turn, that the price-driven systems are exposed to risk of failure. Failure to modernize grades is clearly one of the things that has driven supply chain participants to contracts, written agreements, value grids, and even vertical integration as alternatives to price-driven systems in an effort to achieve high levels of coordination and quality control.

When the product attribute of importance to the consumer is identified and the necessary conditions for price signaling are in place, the price signal still has a tough path to travel. Prices of most food and fiber products are very variable at the farm level. The farmer has to be able to recognize the price signal and separate it from all the other reasons the price for this particular variety or grade is changing—assuming the signal actually reaches the producer level. The middlemen along the supply chain between the product and the consumer are in the margin business. They may or may not be interested in trying to get the right signal to the producing segment. Food and fiber processing and retailing is highly concentrated. Wal-Mart, Kroger, Safeway, Cargill, Bunge, Tyson, and similar multinational firms are not only big and powerful, they are focused on the bottom line in their next quarterly report to stockholders. Making sure that price signals get passed on as messages to producers may not be high priority to large processors and retailers unless a change is needed to protect their own profit positions.

Grading Policy Failures

The USDA policy toward the grades and grading systems they operate is that their grading programs are offered as a service and they will entertain a petition to change and update grades only when a consensus of the industry sector asks for change. But the net result of that policy position is that grades are seldom if ever changed for many important commodities. Some entrepreneurs will always find a way to practice arbitrage and make money from shortcomings of existing grades, and they will not want to see proposals for change. In the mid-1990's, the USDA responded to a request from industry leadership to bar B-maturity cattle from the

Choice and Select grades in the fresh beef market. B-maturity cattle are cattle over 30 months old and can include so-called "heiferettes," cows that have had one calf and are then culled from the beef cow herd. The quality of the eating experience at the consumer level will typically be poor for beef from such older animals. But some entrepreneurs were putting together truck loads of these cheap to buy B-maturity cattle and selling them as Select or Choice fresh beef and making lots of money. Some of the B-maturity cattle, when fed on high energy rations for a few weeks, will grade Select or Choice. And nothing could keep such carcasses out of the fresh beef market and local grocery store counters. Seeing why these entrepreneurs bitterly fought the ban on B-maturity cattle is easy. A consensus for change, even a change that appears to obviously benefit the industry as a whole, is not easy to come by when profit opportunities are based on shortcomings in existing grades.

The grades and grading processes are suspect for many commodities. Wheat may be examined for foreign matter and tested for milling quality, but potentially valuable attributes like the level and quality of protein are never identified and brought into the pricing process. Milk is priced based on fat content since fat goes into cheeses and butter. But the quality of the protein from milk that might be coming from the superior genetics in some producer's cow herd is never measured and is not priced on a differential basis. Peanuts are screened and premiums are paid for the large nuts. The research community has identified oleic acid in peanuts as a contributor to good health. But oleic acid levels are not measured and brought into the pricing process for peanuts. A potentially high-value product because of the health boosting attributes, most peanuts in the U. S. are produced and sold as a commodity.

The list of grading deficiencies could be extended almost indefinitely. Slaughter lambs are priced on dressing percentage but the higher dressing percentage lambs are also usually the fatter lambs and fat is not a valued attribute by the modern consumer. I have heard producers bemoan the weak market for their cabbage. When I looked, they were growing old varieties with huge heads and not the smaller heads retailers are wanting in today's market. Slaughter hogs were historically graded as U. S. 1's and 2's, but over 95 percent of all barrows and gilts going to slaughter were in that single, very broad category. The grading system for slaughter hogs was useless as a means of generating price signals and getting those signals back to producers. In this case, the private sector moved to buy based on probes of back fat thickness as a measure of leanness. For this one very important attribute, leanness, the swine producer can now see the different values and the price differentials that are "signaling" the importance of lean hogs. But portion size, color of lean, and juiciness, all attributes important to consumers, are not identified and priced. Not surprisingly, the pork sector has moved rapidly to contracting, buying agreements, and controlling genetics as large processors seek to force a workable level of coordination and quality control.

The big example of a failure of the price system because of shortcomings in grades comes from beef, the food that still is number one in consumer spending. I will come back to the beef sector later and describe in detail what has happened in the sector, the controversies that have arisen, and what changes would be needed to give the price-driven system a chance to work again.

Failing Price-Driven System Controversy

The move toward non-price means of coordination and quality control has been bitterly contested by some producer groups. A conviction, deeply held by many livestock producers, is that the only way they can get a fair and competitive price for their products is in an open, price-driven marketplace. A petition to the Secretary of Agriculture in the mid-1990's by the Western Organization of Resource Councils called for a ban on contract buying by livestock processors unless the contract price is determined in an open and competitive marketplace where all buyers and sellers have a chance to participate. There was no such market in the livestock industry at that time, and there is no such market in the late 2004 industry. Virtually the same attitude toward contracts and contracting has been presented by R-Calf, a national organization of livestock producers with many members in the plains states from Kansas up through Montana and North Dakota. A legislative proposal to ban processor ownership and most types of contract procurement of livestock emerged from South Dakota's Senators and passed the Senate in 2002 as an amendment to the Farm Bill. The House did not agree and the amendment was dropped in conference. In the 2003 and 2004 Congresional sessions, legislation calling for a ban on processor ownership of livestock and other legislative initiatives that would ban most contract procurement programs have been introduced in both the Senate and House. And in every case, the objective of those supporting Congressional regulations on how buyers and sellers can do business is to force a move back to price-driven systems. In every case, the proposed legislation appears to be replete with possible unintended consequences. The "live chicken" example needs to be recalled in the discussions surrounding the proposed regulations. Some producers want to protect what appears to be a failed price-driven marketing system because that is the system that they are comfortable with and the system that will accept whatever they want to grow. I see little or no concern by the proponents of regulation for implications to consumers, to society in general, or to other participants, including other producers, along the supply chain.

Beef as a Case Example

In 1979, demand for beef started a precipitous decline. Consumer concern about fat and cholesterol in the diet was growing. With larger cattle breeds being brought into production, a growing problem of toughness in fresh beef cuts was occurring. By 1986, with per capita supplies of beef largely constant around 78 pounds, the inflation adjusted price of Choice beef at retail had declined nearly 35 percent from 1979 levels. In 1990, a national beef quality audit financed by the National Cattlemen's Beef Association (NCBA) reviewed industry studies and confirmed what was, by this time, a widely know fact: 20 to 25 percent of the Choice and Select steaks and roasts in the fresh beef counter were too tough to chew. In 1997, when I built a demand index for the NCBA to measure levels of demand compared to 1980 as a base year, the demand for beef was down nearly 50 percent. Before demand finally bottomed in 1998, per capita consumption of beef had declined from 95 pounds in 1976 to 63 pounds. And the industry had lost over 30 percent of its market share to the poultry sector. The beef cow herd declined from 46 million head in the mid-1970's to 33 million head in the 1990's and the equivalent of over 300,000 average size cow-calf producers had been forced out of business. The demand problems continued unabated and grew for 20 years with all slaughter cattle coming out of the feedlots selling each week at essentially the same average price. There was no price discrimination and no price signaling for tough versus tender beef because this important attribute that cannot be observed directly by consumers was never brought into the grading and pricing processes.

The focus on just the grading issues in this complex industry and the inability of the industry to deal effectively with demand problems is instructive. The horrific 20 to 25 percent product failure rate persisted as the toughness problem cropped up in fresh beef consumed at home and in many restaurants and institutions. The quality grades Choice and Select and the occasional Prime cut are based on marbling. Research that measures tenderness and relates variations in tenderness to marbling scores indicates that marbling, in a statistical context, explains only about 30 percent of the variation in tenderness. If three or four tenderness measurements had been brought into Choice and Select quality grades, the different prices paid by consumers could have sent clear signals through the industry all the way to producers, but the quality grades have not been changed since 1976. I conclude that the industry, with its internal and often profit-based conflicts over the need for changes in the grades, and the USDA, with its reactive rather than proactive policy position, allowed the price-driven system for cattle to fail. The largely rational consuming public turned away from the unpredictable performance in beef, the product with the highest prices in the meat counter, and moved to poultry, pork, and seafood.

The quality inconsistencies imposed a huge cost on the industry. Given the size of the beef industry, spending on research and development of new products was miniscule throughout the 1980's. By 1990, retail surveys were indicating that the beef sector was offering fewer than 100 new product forms a year, and the poultry sector was offering 400 new products per year. Cattle with highly variable performances in quality, including tenderness, were selling at one average price each week. No price discrimination signals for value were being sent to producers. The large processors shied away from spending on new quality assured and branded fresh beef products. They asserted that they could not get the needed quality consistency in the cattle they were buying in the price-driven market to justify spending on new quality controlled fresh beef offerings. Startled by the rapid movement in pork to contract procurement strategies and to vertical integration that resulted in new branded product lines in fresh pork, the big cattle packers finally started to look seriously at alternatives in the 1990's. To achieve the quality control needed to support the new product lines, beef processors turned to contracts, marketing agreements, and other forms of what has come to be called "captive supplies" and bought cattle meeting the needed quality specifications. The big beef packers have spent billions on pre-cooking technology, new products, and new market development since the move to non-price means of coordination and quality control swept through the industry in the mid-1990's.

These non-price means of coordination and quality control are what the Congressional initiatives would outlaw or constrain. If the regulations are imposed, I suspect the big packers will stop or sharply reduce research and development spending on new beef products and new markets. The industry could spiral into demand declines again. The possible return to demand declines is the unanticipated consequence of the proposed regulations that I find most distressing. Losing the spending on new products would hurt the producer the most. Producers are a residual claimant on what is left after consumers set value via prices they will pay and all the middlemen along the supply chain seek to extract a targeted operating margin per head. Industry sources like *CattleFax* have estimated that the demand increases since 1998 have added $200 per head, about 20 percent, to the value of cattle at the producer level.

Unless constrained by Congressional regulations, I suspect that the beef sector will move still farther away from price-driven systems. Vertical alliances initiated by frustrated producers who were not being paid true value for high quality cattle are now controlling about 20 percent of the fed cattle supplies. I expect alliance shares to grow. Quality controlled and pre-cooked beef entrees that can go through the very

convenient microwave are pulling consumers back to beef. The new entrees are a big component of the 22 percent increase in demand since the 20-year slide was finally reversed in 1998.

Cattle producers will have to decide whether they want to be a part of a growing industry with new non-price approaches to coordination and quality control or participate in a sector that is still dealing in low value and commodity beef. A market will exist for both high and low quality products, but I suspect the strong trend to non-price approaches that focus on quality will not be reversed. The record high cattle prices of 2003 and 2004 are likely to see new record highs again in 2005 and beyond. Understanding that the high prices are coming at least partly from the new product lines and that the coordination and quality control that support those new lines are coming from non-price approaches like contractual procurement is slowly spreading through the producing sector.

For Price-Driven Systems to Compete

I believe it is too late for beef to go back to a price-driven system, but the lessons learned in the beef sector should not be lost. In any and all commodities, allegiance to price-driven systems should not be blind to what it takes for these systems to work. Grades must identify all the product attributes that are important to consumers so that those attributes can be valued in the price discovery process and price signals can be sent to producers. In an increasingly sophisticated society that knows more about nutrition and what we should eat to prevent chronic disease, the grades and the ways the products are described will surely become more complex. My hope is that the energies now being spent trying to legislate a return to price-driven systems in sectors where price has clearly failed as a coordinating and quality control mechanism will be directed differently. That energy needs to be focused on meeting the conditions that the price-driven systems will need to succeed, and modernization of grades would be job number one.

In many of our food and fiber commodities, it is not too late to make progressive changes in grades and grading. If a new variety of soybeans has a high level of an attribute that boosts immunity to chronic disease like heart ailments and stroke, that attribute must be identified, measured, and priced. The grade "No. 1 yellow soybeans" in today's price reports is not good enough. If researchers manage the genome to create a new variety of some fruit or vegetable that can help reduce the incidence of plant disease and improve the nutrient quality of the product, we do not need to cling to a price-driven system that does not even identify the new high tech product attribute. And if beef coming from cattle that eat forages treated with a seaweed extract developed in our research labs can consistently offer a higher level of antioxidants in the meat that boosts human immunity to chronic disease, that beef clearly cannot just be labeled as Select or Choice.

We will, without question, see the impact of the ability to manage the genome creep into our food systems. The technology will be managed via contracts across the participants along the supply chain, however, and not from price signals in the shrinking price-driven systems in sectors like beef. If I am asked to invest in high cost scanning or testing technologies in beef or in any other food or fiber product, I will want enumerated, in writing, how I will be compensated. The notion that a price-driven system with little or no specificity in grades and grading will, somehow, deliver a return on my investment in the form of a price premium is not going to be nearly good enough. When any group contacts their elected officials in Congress and demands legislation to block buying by contract so livestock producers can continue to grow and sell what they have always grown and still want to grow, we need to remember the live-chicken example. Society does not owe anything to producers who refuse to change in response to a changing consumer and a changed marketplace. Neoclassical economists liked the workings of price-driven systems, but they would have supported, I think, the need for change and adjustment so that their price-driven systems have a chance to work.

Related Websites

Research Institute on Livestock Pricing, found at *http://www.aaec.vt.edu/rilp/*, provides demand indexes for beef.

NCBA found at *http://www.beef.org/*

Agricultural Marketing Service found at *http://www.ams.usda.gov/*

R-Calf found at *http://www.r-calfusa.com/*

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