Looking for Government's Role as an Agricultural Safety Net

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What makes agriculture especially deserving of an active government safety net? What is different about agricultural production? Are we concerned about a safe and reliable food supply or about farmers' incomes and returns to assets? Those who make farm policy base their arguments on all of these points: the diffuse nature of agricultural production, the inherent production risk in agriculture, the need for a safe and reliable food supply, shortcomings in farm income, and low returns to assets in agriculture. This paper addresses these points and, in so doing, rules out some of these concerns as legitimate bases for current agricultural policies. By focusing on those that are genuine, U.S. farm policy could spend limited resources in areas where the most good could be done, thus benefitting both farmers and taxpayers.

Key Words: agricultural policy, farm income, farm-sector safety net, market power

The United States has always had a special place in its culture for farmers. Originally, only landowners had the right to vote on the theory that the literal "stewards of the land" would also be the ones to care most about its future. Even while acknowledging the special cultural status of the American farmer, one must also note that the government's role as a safety net for agriculture only dates to the expansionary New Deal era of so many new government programs. Prior to the 1930s, the federal government had some limited involvement in the realm of weights, measures, and health standards; imposed tariffs on foreign agricultural commodities for both revenue-generating and protectionist reasons; and had recently provided antitrust exemptions for agricultural marketing cooperatives (in the 1922 Capper-Volstead Act). While some of these policies were clearly designed to increase farm income, the explicit government safety net of guaranteed prices began with the New Deal.

After the 1930s, we have had government-guaranteed prices for some commodities, federal government storage of commodities (to support the price in the short

and longer run), production quotas in several commodities designed to restrict supply and raise price, government-subsidized crop insurance to protect against low yields (and more recently even against low prices), government subsidy programs for exports, government-sanctioned "cartels" that exempt farmers from antitrust laws, government payments for producers to not produce (thus hopefully raising market prices by decreasing supply), and frequently we have topped off all these (and more unlisted) programs with emergency payments to farmers when farm income in a region or nationally suffers a blow due either to bad weather or low prices.

Although the 1996 Federal Agriculture Improvement and Reform (FAIR) Act, the most recent piece of federal farm legislation, was designed to reduce government interference in agriculture and bring about almost a free market in the agricultural commodities, a majority of the programs listed above are still active today. While the federal government provides subsidies and other forms of direct and indirect assistance to many other industries in today's economy, no other industry has so many programs or ones that are so openly acknowledged.

So what makes agriculture especially deserving of an active government safety net? What is different about agricultural production? Are we concerned about a safe and reliable food supply or about farmers' incomes and returns to assets? Those who make farm policy base their arguments on all of these points: the diffuse nature of agricultural production, the inherent production risk in agriculture, the need for a safe and reliable food supply, shortcomings in farm income, and low returns to assets in agriculture. This paper will address these points and, in so doing, rule out some of these concerns as legitimate bases for current agricultural policies. By focusing on those that are genuine, U.S. farm policy could spend limited resources in areas where the most good could be done, thus benefitting both farmers and taxpayers.

Diffuse Production

When economics professors teach students about markets, we use two extremes to demonstrate different types of market organizations: a monopoly is a market with only one seller of a good with no close substitute, and a perfectly competitive market is one with infinite sellers of identical goods. A monopolist can set any price desired and then quantity sold is determined by consumers' responses to that price. In a perfectly competitive market, sellers have no pricing power because their product cannot be differentiated from those of other producers and there is always an alternative seller ready to fill the desires of the consumer. Thus, in the long run, price is determined by the minimum cost of production (try to charge more and you will be undersold by another producer) and quantity is determined by consumer demand at that price. In the classroom, students are told that no industry exactly meets the conditions of a perfectly competitive market, but agriculture is almost universally used as an example of the industry closest to this condition.

Agricultural production is, in fact, very close to this artificial standard of infinite sellers with no individual control of prices. While statistics are often presented concerning the minor role in production played by a large number of small-scale producers, this should not lead us to the false conclusion that the large-scale producers are not still small in a relative sense (compared to many other industries). It is true that the largest 30% of farms produce well over 90% of the total farm output [U.S. Department of Agriculture/Statistical Reporting Service (USDA/SRS), 1998]. Thus, of the roughly 2 million farms commonly referred to, only 600,000 are needed to produce all the food we need to eat.

Even the largest farms, however, are still small businesses. The U.S. Small Business Administration generally defines a small business for purposes of eligibility for its programs as one with fewer than 500 employees. While no exact statistics are reported on this level, the number of farms with greater than 500 employees is almost surely well under 1,000 nationwide. Statistics do reveal that less than 3% of farms have sales over $500,000 (USDA/SRS, 1998). Such sales figures are commonly exceeded by a single location of a fast food restaurant (McDonald's, Wendy's, etc.). Any farm that employs over 500 people (even counting all distinct part-time employees) would likely have annual sales in the range of $7–10 million at least, clearly a very rare farm indeed.

This large number of small producers is faced with a much smaller number of larger-scale buyers (food processors, supermarket chains, textile companies) that have the resources and technology to quickly and inexpensively find low-cost suppliers. Further, except in a few cases (e.g., organics, specialty fruits and vegetables), the farmers cannot "brand" their products to distinguish them from those of the other potential suppliers. This imbalance in market power puts farmers at a disadvantage relative to buyers in negotiating a price for their commodity (particularly for perishable commodities that either completely spoil or lose part of their value if not sold in a timely manner). The imbalance is not simply a product of concentration (i.e., the small number of buyers), but arises more from the ability (or credible threat) of buyers to find alternative sources of the perishable commodity at the lowest available price; a combination of market concentration and informational asymmetry together form the main basis for the imbalance of market power.

The federal government recognized this imbalance and created marketing orders to help correct it. Marketing orders can be established on a state or national level and allow growers to act together without violating the Sherman Antitrust Act. Producers can organize methods to reduce supply (thereby raising price and total revenue if the price elasticity of demand is inelastic), impose quality standards on all producers in the marketing order (often a backdoor supply reduction mechanism), and conduct joint research and advertising activities designed to raise industry income. Interestingly, the supply control aspects of marketing orders have never been used as widely as economic theory suggests they should be (given the commonly perceived inelastic demand for the covered commodities).
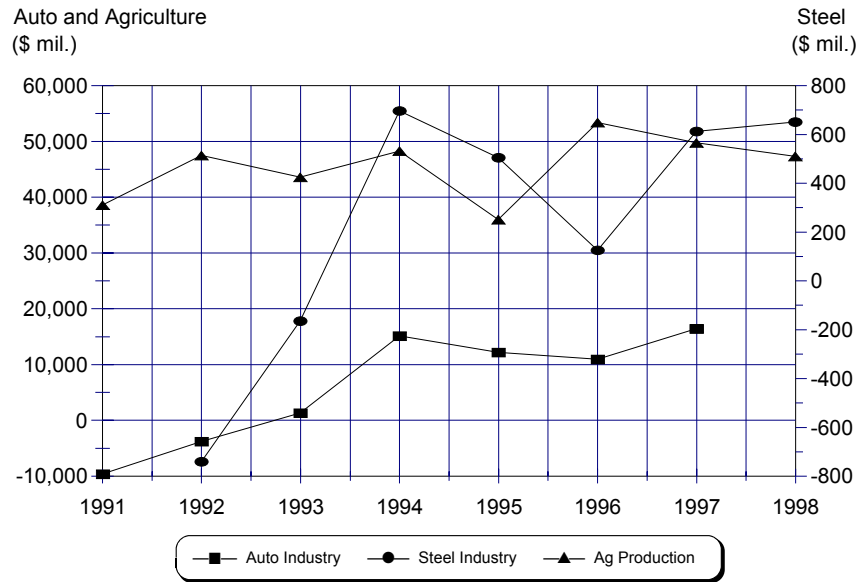
Figure 1. Annual profits in the U.S. farm, automobile, and steel industries, 1991–1998

Production Risk and Its Effect on Farm Income

Agricultural production is obviously subject to random weather events, especially crop production. However, that does not mean it is necessarily subject to wider swings in either profitability or output than other industries. Figure 1 shows the profit from three U.S. industries from 1991 to 1998: agriculture, automobiles (Ford, GM, and Chrysler), and steel. Agricultural profits do not appear more variable from the graph. Further, if we calculate the coefficient of variation (COV, the standard deviation divided by the average value), we find that agriculture's is the lowest (agriculture = 0.13, automobiles = 1.65, steel = 2.22). Since the coefficient of variation measures relative profit riskiness by scaling a measure of the variability of profit by the average profit, lower values mean less relative risk. Thus, U.S. farm income is less variable than either U.S. auto or steel company profits.

Figure 2 shows U.S. housing starts along with yield time series of three agricultural commodities: Georgia cotton yields, Georgia corn yields, and South Dakota wheat yields (USDA/National Agricultural Statistics Service). The states were chosen as representative of more risky production regions and the crops were chosen for their relative importance. The output of the U.S. housing industry appears to have variability of the same order of magnitude as agriculture. This is not altogether surprising as (housing) construction is a famously cyclical industry subject to the whims of both the economy and the weather. Looking at the coefficients of variation again, we find that Georgia corn yield has a COV of 0.38, Georgia cotton has a COV
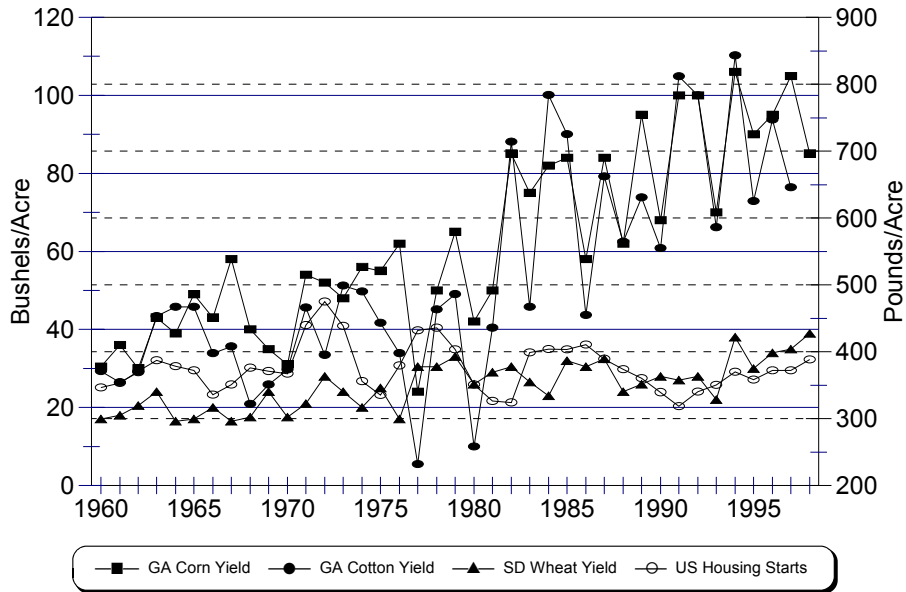
Figure 2. Selected state average crop yields and annual U.S. housing starts, 1960–1998

of 0.30, South Dakota wheat has a COV of 0.25, and U.S. housing starts has a COV of 0.20. Thus, housing starts are somewhat more stable, but all four series are reasonably similar in terms of variability around their mean values.

Taken together, this very cursory examination of the variability of agricultural production suggests that the oft-claimed importance of production risk as a special trait in agriculture is overblown. This would suggest that federal policies aimed to combat production risk, such as subsidizing crop insurance and "disaster" payments, are not needed and are designed to solve a problem that is not of overwhelming magnitude. Further, examination of the data from 1965 to 1997 (USDA/SRS, 1998) shows that government payments have only reduced the variance of net farm income by 10% (these data will be presented below); thus, while the problem itself may not be large, the solution is only a slight remedy anyway. More in-depth discussions of crop insurance policies can be found in Goodwin and Smith (1995), or Knight and Coble (1997).

A Safe, Reliable Food Supply

Another tenet of federal agricultural policies is that government involvement (and subsidies) is necessary to ensure the provision of a safe, reliable, and affordable food supply. The safe part is assumedly promoted by government health and chemical

regulations enforced by the USDA and the FDA. There is a clear public interest here, the current system appears to work quite well, and no major changes are needed. In fact, if anything, government overregulates safety, banning chemicals that have tiny probabilities of causing damage, and as a result costing farmers millions of dollars due to higher cost substitutes or lost production. When the U.S. population has a base cancer rate of 1 in 4, banning chemicals that might cause one cancer in 1 million people (if they all eat a full serving of the agricultural product daily with the chemical residue exactly at the legal limit) makes little sense. In other words, farmers are banned from using money-saving technology if it increases a person's lifetime probability of getting cancer from 0.25 to 0.250001. This policy seems a bit extreme. There has been some recent movement toward using benefit-cost analysis in a small set of such regulations; an expansion of this new trend would be a welcome shift in policy making. By this, I mean not simply computing costs and benefits as is generally required by law, but actually using the cost-benefit ratio to decide whether or not to impose a regulation.

"Reliable" is a term used in agricultural policy to imply that the product is in the store when we want to buy it and that the country is not overly dependent on imported food sources so as to protect national security. The falsehood that government involvement is needed to achieve these goals is proven easily by the continual presence in the grocery stores of a wide selection of fruits and vegetables which are grown with the bare minimum of government programs. While it is true that a fair percentage of such produce is imported, the imports are either a mechanism to allow year-round availability of favored items or are less expensive even after accounting for transportation costs. Without a single government program, the American farmer can supply all our fruit and vegetable needs with the slight inconvenience of not having out-of-season varieties available to consumers (and perhaps a small price increase). When one considers how large a percentage of the major crops is exported on an annual basis, it seems clear that these, too, can be produced in adequate supply without government programs. Exports would likely decline, but that is unrelated to the goal of a reliable food supply for the country.

The key word of the common refrain is "affordable." American consumers spend the lowest percentage of their income on food compared to people in any other country in the world—about 12%. We have the most affordable food supply on the planet. However, if we stopped all the government programs that transfer taxpayer dollars to farmers, the cost of food would rise. The question is how much? Government payments over the past 35 years have averaged about 16% of total net farm income. If that payment was instead borne directly by consumers, one might think that the food bill would rise from 12% to 14%. Yet this is not the case, because much of the consumer-level cost of food is all the processing, shipping, packing, and marketing that occurs between when the farmer grows oats and the consumer eats Cheerios®. In fact, the cost of the actual farm output is less than 10% of an average consumer's grocery (and restaurant) bill. Thus, the total cost of food would rise from the current 12% of income, but likely would remain below 13%. Further, the consumers who will now pay higher prices are also the taxpayers who
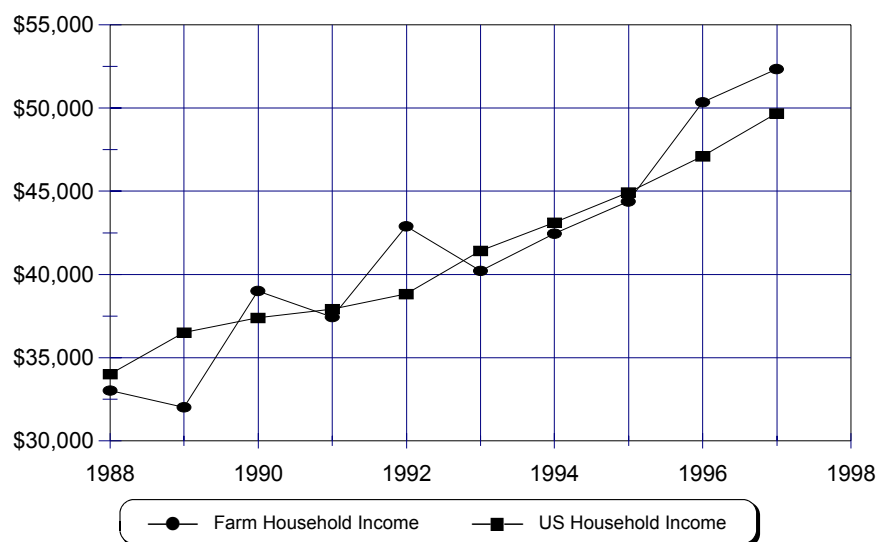
**Figure 3. U.S. farm household and all household incomes,
1988–1997**

(might) receive an offsetting tax cut due to the lowered cost of federal agricultural
support programs.

Farm Income

In the 1930s, when federal agricultural policy was truly born, farm household in-
come was very low (as were incomes in many households) as the U.S. went through
the Depression. But are farm incomes low today? The official U.S. statistic on farm
household income, in fact, shows an essential equivalence between farm households'
income and the average household income for the entire country (farm households
included). These data are graphed in figure 3. Of course, government payments are
included in the farm household's income. So without government programs a small
gap would appear, on the order of $4,000 per farm household (although much
smaller for the median farm household). This would still leave farm household
income close to the national average, perhaps 3–5% below. The reason for the
convergence over time of farm household income to the national average and the
declining importance of government payments to farm income is the increasing
prevalence of off-farm income in farm households. This demographic fact has essen-
tially solved the farm income gap more effectively than any government program
ever did. See Gardner (1992) for a full discussion of this issue.
    USDA data from 1965 to 1997 can be used to compare net farm income including
and excluding government payments, allowing an examination of the effectiveness

of government payments in stabilizing (and increasing) farm income. The variance of net farm income is 10% higher when government payments are excluded, with the standard deviation rising from $12.63 billion to $13.27 billion (all computed in 1992 dollars). The correlation between government payments and net farm income is −0.31, implying that government payments do indeed smooth out variation in net farm income. This correlation coefficient also provides some measure of the relative roles of income stabilization versus income transfer in government payments: straight income transfer would yield a correlation of 0, and a policy of straight income stabilization would yield a correlation of −1.

Further, as has been reported frequently, farm households have much higher net worths than does the average American family. Using 1996 data (USDA/SRS, 1998), the total value of farm assets is $1,035 billion (just over $1 trillion), and the total of farm liabilities is $156 billion, which leaves a net worth of $879 billion. Given the 2 million farms reported in government statistics, these values imply an average net worth of about $439,000 per farm. This sizeable equity in the sum total of American farms appears to argue against government programs designed to transfer wealth from the taxpayers at-large to farm owners.

Returns to Assets in Agriculture

There has been an historical perception that returns to farm assets are lower than the equilibrium value in the rest of the economy, but that asset fixity makes this problem hard to correct. Asset fixity is a term economists use to mean that farm assets are hard to move from farming into other endeavors. Quantitative research has come down on both sides of this question (cf. Chambers and Vasavada, 1983). However, a recent study conducted on returns on assets (ROA) used in the production of 10 major Georgia agricultural commodities found rates of return on farm assets to be in line with those in the rest of the economy (Dorfman, Alday, Rickett, and McKissick, 1999). For some commodities, ROAs were quite high (irrigated cotton had an ROA of 14.3%), while others had estimated rates of return in the low single digits (hogs had an ROA of 2.3%, dryland cotton's ROA was 3.5%, broilers had an ROA of 1.5%, and dryland corn had a negative ROA of −1.7%). Overall, these percentages match those in the wider agribusiness sector (Coca Cola's ROA is 15%, General Mills' most recent ROA was 12.9%, and Kellogg's is 9.1%), and in the broader economy (Ford's ROA is 2.4%, GE's is 2.7%, and Bank of America's is 0.9%). This suggests that any asset fixity problem agriculture may have had in the past is no longer germane.

So What Policies Do We Need?

The evidence presented in this paper suggests that agriculture does not need income transfers to boost farm household incomes. It doesn't need more forms of crop insurance or bigger subsidies for the premia on existing crop insurance policies. The

government does not need to make (emergency) disaster payments in years with below-average net farm income—particularly since such payments serve partly to keep marginal producers in business, thus increasing output and keeping future prices lower. Due to current land and other asset prices having been inflated by expected returns to farming from government payment sources, federal agricultural programs that transfer income to producers should be discontinued gradually or in favor of a system of transition payments similar to the current production flexibility contract (PFC) payments provided under the 1996 FAIR Act. Some studies have shown that land prices include a premium equal to one-half of the present (discounted) value of expected future government payments (cf. Goodwin and Ortalo-Magné, 1992). Therefore, such a transition must exercise caution to avoid problems such as were encountered after the Tax Reform Act of 1986, which caused upheaval in the real estate sector (Auerbach and Slemrod, 1997).

Effective and well-regarded policies in the realm of health and food safety should be continued. These policies appear to enjoy widespread public support and to be worth the government's cost. However, we should be careful not to lose sight of objectivity in this area by passing regulations that make marginal improvements in health and safety at extremely high costs. Expansion of the use of benefit-cost analysis in this area of regulation would help ensure that the public is protected without imposing excessive costs for the sake of irrelevant gains in health and safety standards.

Marketing orders and other mechanisms that help to balance market power should be continued and expanded. Farmers also need to explore ways to negotiate from a position of greater strength: utilizing cooperatives, retaining ownership through value-added steps, forward contracting especially of proprietary products, and other innovative approaches to capturing a larger share of the total food sector pie. Retaining ownership (or an ownership interest) beyond the farm gate will be key for farmers in increasing farm income if government subsidies are scaled back.

Finally, while I have argued in this paper that government's role in subsidizing agriculture should be reduced and that agriculture is not as "special" as some would have us believe, the government subsidizes many industries in overt and in hidden ways. Thus, while agriculture does not deserve special treatment, neither does it deserve to be placed at a disadvantage relative to other industries. If the government does continue to subsidize agriculture, the evidence presented in this paper suggests focusing on the area of market power. Economic theory suggests making any income transfers as simple and transparent as possible, implying that we should strive to use the simplest, most direct method. In this sense, the 1996 FAIR Act is a step in the right direction, and if it is truly used as a transitionary period toward a freer market agricultural sector, it will be worthwhile progress in national agricultural policy.

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