Food and Agricultural Policies of the United States

Part A — History and Development

Part B — Alternatives and Prospective Directions

Edited by
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Preface

This monograph represents the proceedings of two jointly coordinated Organized Symposia held at the Annual Meeting of the American Agricultural Economics Association (AAEA), in Chicago, Illinois, on August 7, 2001.

Part A of these proceedings is primarily the product of the newly organizing Seniors Section of the AAEA. Leo Polopolus, University of Florida, was the organizer, and Jerome Stam, United States Department of Agriculture, Economic Research Service (USDA/ERS), was the moderator. Bringing historical perspective to public policy issues is a priority program goal of the Seniors Section of the AAEA.

Thus, Part A of these proceedings provides commentary by senior experts of the profession who were directly involved with the development, administration, and/or analyses of food and U.S. agricultural policies.

Part B of these proceedings provides “alternatives and prospective directions” of food and agricultural policies of the United States. Organizers of this program were Marvin Duncan of OEIC/CEPNU of the USDA, Jerome Stam of USDA/ERS, and Bradley Lubben of Kansas State University. Jerome Stam was also the moderator of this session at the Chicago meeting.

In fulfilling its charge, presenters of Part B laid out some key assumptions about underlying agricultural markets affecting future policy decisions. Analysis of policy alternatives and consequences and analysis of producer preferences for policy alternatives were also presented. The Part B discussion seeks to combine history of farm policy, underlying economic assumptions, and policy alternatives within the political environment to provide insight on likely policy directions for the next Farm Bill.

A special note of “thanks” is extended to Dr. John Gordon, former Chair, and William Messina, Jr., Interim Chair, Department of Food and Resource Economics, University of Florida, for providing the resources to print this volume.

Leo C. Polopolus  
Chair, AAEA Seniors Section  
and Professor Emeritus, University of Florida
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Part A

History and Development

How Agricultural Economists Got into Farm Policy
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Discussion—Food and Agricultural Policies of the United States: History and Development
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Farm Policy Objectives and 1996 Farm Bill Premises

Daryll E. Ray*

Introduction

Following the lead of earlier chapters, I begin by discussing commodity policy objectives, and then the historical reasons why we have had to concern ourselves with commodity policy. After all, we do not have specific price and income policy for bolts or television sets. Then I discuss some of the thinking/circumstances that led us to where we are today. Finally, I offer some thoughts about a commodity program structure that is consistent with what I believe may be the objectives of commodity policy.

Farm Policy Objectives

Based on discussions and rhetoric of recent years, one could believe that farm programs exist only because agriculture has the political muscle to extract billions of dollars from Congress. And that farmers receive large piles of money, not because it partially replaces severely depressed market receipts, but because the farm program is a money spigot to which the richest of farmers are addicted. Furthermore, current farm program recipients (those who grow primary/program crops) are now the envy of other farm producers, many who have marketing orders or previously have taken great pride in not being a part of a federal farm program.

So is that what farm programs are all about—entrepreneurial rent seeking? Is that what Henry Wallace and the other architects of commodity programs had in mind? What I learned as an agricultural economist was that commodity programs had everything to do with the economic nature of agricultural markets and nothing to do with hopping onto gravy trains.

To me, an overall objective of farm and food policy is to ensure an ample quantity of safe, nutritious food at reasonable prices. While that sounds like a platitude, I would argue it encompasses three of the major types of more specific farm policies dealing with agricultural productivity, food safety and other regulatory policies, and commodity programs.

* Daryll E. Ray, professor, Department of Agricultural Economics, University of Tennessee, Knoxville, TN.
Public investment in the research, teaching, and extension missions of Land-Grant Colleges/Universities; technical services; today's extended credit options; and past land distribution policies set the foundation for continued productivity growth in production agriculture. Commodity programs' intended policy contribution, as explained by agricultural economists such as Earl Heady, Willard Cochrane, Glenn Johnson, and Dale Hathaway, is to provide a measure of price and income stability, which can promote a prosperous agriculture and provide a more certain environment for farmers and their creditors to adopt/purchase new technologies.

**Quantity Supplied Unresponsive to Price**

Why is it necessary to have special price and income stability programs for agriculture? Part of the answer is that the productivity portion of food and agricultural policy has been “too” successful. The taxing public's productivity investment, coupled with the largely applied private research, has resulted in crop yields that consistently outpace growth in crop demands. This is a good thing. The sustained ability to maintain or expand the distance between agriculture's capacity to produce food and the demand for food is one of America's great accomplishments.

The problem arises because major crop producers tend to use all of the productive capacity that is made available to them. Other industries gauge their productive capacity by the quantity that can be sold at a profit. However, since grain, soybeans, and cotton are individually homogeneous and no one farmer produces a sufficient quantity to influence the product's total supply and price, farmers have no incentive to idle part of their acreage. They plant all their acreage, all the time, to something. Thus, aggregate crop output declines very little even with drastic reductions in farm price levels.

Even when prices are below the farmer's variable cost of production, he may borrow-down his equity until his net worth is decimated or the bankruptcy court won't let him in the field. While a redundant tire plant would be permanently shutdown with assets transferred to another industry, bankruptcy of a farm's owner/operator usually results in no such transfer. The land remains in agriculture and another farmer, probably with superior management abilities, immediately brings the land back into production. Since the total acreage of major crops does not respond significantly to reduced price levels, crop agriculture does not and cannot "cure low prices with low prices" within a reasonable time frame.

**Quantity Demanded Unresponsive to Price**

Just as total crop supply tends not to adjust significantly to lower prices, neither does the quantity demanded. The demand for domestic food and total agricultural output is notoriously unresponsive to price. While the mix of food consumed and demand for services attached to the food respond to price changes, the volume of food consumed in a country such as the United States is largely invariant to the general price level or to changes in income. We do not go from three meals a day to five because of a dramatic drop in food prices or because our incomes have changed. This fundamental characteristic of food demand constrains the price elasticity of total domestic demand for agricultural output, even though industrial demand, livestock demand for feed, and textile demand for cotton provide slightly more price responsiveness to total farm output than otherwise would be the case.

This same principle generally applies to total world demand for food. People in Japan, the European Union, and other major U.S. export-customer countries are no more likely than Americans to eat additional meals per day because food prices have dropped. Thus, total world food demand is price inelastic. Albeit somewhat less inelastic than in the United States, since in countries with inadequate food supplies a price decline may allow hungry consumers to purchase a larger quantity.

A country's export demand does not necessarily exhibit the same, extremely low price responsiveness as total world demand. For example, if five countries are the major source of an agricultural crop for export, a country with a small share of the world export market may experience a relatively large increase in exports by dropping its price when other exporting countries will not lower their price because of the minimal exports involved. However, in an oligopolistic market structure, which has long characterized agricultural export markets, a price change by a major exporter usually results in "follow the leader" behavior among other exporters.

While much has been made about export's potentially higher price elasticity, a couple of things are clear. First, in the short-run, countries with a large share of crop exports have trouble gaining much advantage in the export market by lowering their prices because all other export countries follow suit, leaving each of them with little change in the export volume or changes their respective export shares. Thus, each country exports about the same but receives less revenue because of the lower price.
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Second, if farmers are to benefit from a higher price, exports must account for a large proportion of the country’s total crop demand and/or the price responsiveness of exports must by very large. That is true because farmers only benefit from a lower price if the total quantity demanded increases by a larger percentage than the percentage reduction in price. Or, from the farmer’s standpoint, there must be long-term benefits that greatly expand the country’s exports over time such that the increased exports will more than compensate for the low price elasticity of, say, a relatively constant domestic demand.

Third, for exports to increase sufficiently for a country’s farmers to benefit, assuming that the extra exports would actually make total demand elastic, the additional exports can only come from two places: increased total imports or wrangling exports away from other exporters. As we saw earlier, the first source is not very promising because, just like U.S. domestic demand, the world demand for agriculture’s output is not very responsive to declining prices. Nor are lower prices likely to persuade farmers and governments in importing countries to significantly reduce indigenous production. In addition to the considerations that cause U.S. farmers not to curb output significantly when crop prices decline, many, if not most, importing countries want to retain their agriculture’s productive capacity for national food security (or other reasons) despite the cost disadvantage of domestic production compared to importing. Thus, it is unlikely that the size of the total export pie is going to dramatically expand with lower prices.

The other longer-term source of additional exports originating from a prolonged, say policy-based, price decrease is from other exporters such as Canada, the European Union (EU), Australia, Brazil, and Argentina; the countries that, like the United States, consistently produce more bushels or tons of major crops than can be consumed domestically. To fix ideas, consider how U.S. farmers and general farm and commodity organizations would react to a market or farm policy that professes to shrink the size of U.S. agriculture down to domestic needs. Neither are the farmers and farm groups in other exporting countries going to be willing to give up export markets. Even under high cost of production to price conditions, observed behavior suggests that our export competitors jealously guard their existing export markets and also covet the exports of others. Although exports are generally recognized to be somewhat more elastic than domestic demand, lower prices have historically not brought forth mammoth increases in the quantity exported.

Non-Price Demand Factors

Traditionally, the most important domestic demand shifter for agricultural output is population. Changes in tastes and preferences and per-capita incomes affect the consumption of individual commodities/foods but have relatively little impact on total demand.

On the other hand, changes in per-capita income and population growth in importing countries are important world demand shifters, and by extension, so is export demand. However, export demand tends to be fickle. It is influenced by weather in importing and exporting countries, general economic conditions, and political decisions, all of which can take unexpected twists and turns. There only have been three times during the last century when prolonged bursts in exports generated prosperous major-crop agriculture. Those export bursts were not due a sustained increase in per-capita incomes of importing countries or other permanent demand shifters. Rather, they are due to political decisions or circumstances surrounding the two world wars of the twentieth century and the 1970s.

Putting it All Together

The traditional explanation for agriculture’s chronic price and income problems relates directly to crop agriculture economy. Farmers cannot affect commodity prices so they try to reduce costs by adopting new technologies, much of which is publicly financed. As more farmers adopt a given new technology, output increases and the aggregate supply curve shifts to the right. Typically, it shifts to the right at a faster rate than total demand so prices drop and crop inventories accumulate. However, lower prices do not cause a large enough increase in quantity demanded by output-buyers nor sufficient reduction in the quantity supplied by farmers to reduce inventories and boost farm prices in a reasonable length of time. This is not what is supposed to happen. The unique characteristics of food demand (a finite quantity is demanded whether prices are high or low) and aggregate supply (resources, especially land, are used to grow something over an extremely wide range of prices) keep crop agriculture from self-adjusting like other sectors. The nicely sloped (i.e., relatively price elastic) demand and supply curves that appear in textbooks bear no resemblance to the aggregate demand and supply curves for crop agriculture. To represent aggregate crop agriculture’s ability to adjust quantities as prices change, we need to pivot the textbook supply and demand curves so each is nearly vertical. Thus, in a
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nutshell, as traditionally viewed by agricultural economists, commodity programs were enacted to overcome market failures that result when exogenous forces cause a nearly vertical supply curve to shift to the right faster than a nearly vertical demand curve.

The New Era Euphoria and the 1996 Farm Bill

Overtime, however, especially when the 1996 Farm Bill was debated and passed, conventional wisdom was that things are different now and that old characterizations of aggregate major-crop market structure were no longer valid—agriculture was beginning a new era and the more free-market oriented farm bill would facilitate agriculture's full realization of its prosperous future. There were major adjustments in the elements that had long caused price and income problems in agriculture such as rate of shift in the aggregate crop demand curve relative to supply, responsiveness of quantity demanded to price changes, and price responsiveness of supply.

Rapid Export Growth Expected

In the years before debate on the 1996 Farm Bill, China and other Asian countries were experiencing unprecedented annual rates of per-capita income growth (some in the double digits). Higher incomes in Asia were postulated to generate increased per-capita expenditures on higher-value food items such as meat and poultry products so that increases in these products would increase the need for feed grains (primarily corn). The collective judgment of those generating projections and policy baselines was that livestock and poultry grain requirements would exceed the countries' grain production capacity. The mere size of China's population made it the central focus of the analysis. Analyses by the United States Department of Agriculture (USDA), Congressional Budget Office (CBO), the Food and Agricultural Policy Research Institute (FAPRI), and others projected substantial Chinese corn imports.

Figure 1 shows baseline projections made by FAPRI for 1996 through 2005. CBO and USDA made similar baseline projections. FAPRI showed Chinese net imports near 1995 levels until 1998 when net imports began a steady growth so that by 2005, Chinese net imports should be equivalent to half of recent U.S. corn exports. Actual data through 2000 are shown plus FAPRI's 1999 projections.

Figure 2 shows how the projected growth in Chinese net imports during the mid-1990s was translated into increased U.S. export demand for corn. Also, this figures shows the USDA's 1996 baseline projections of U.S. corn exports. Again, FAPRI's or CBO's 1996 baseline projections show a similar upward U.S. export path. Actual U.S. corn exports are shown through the year 2000 along with USDA's 2000 baseline projections of corn exports through 2005. Annual corn projections for the 1996-1999 marketing years averaged 400 million bushels per year greater than the quantity of corn actually exported.

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Agriculture did not enter a new grain export era in the mid-1990s. In retrospect, the misplaced optimism about China’s need to import grain is an example of not taking into account the unique nature of food and agriculture. Food is a national security issue in many countries. Presented with China’s projected grain needs, the U.S. interpreted large and accelerating grain exports to China, while China viewed the projections as a wake-up call to jack up productive capacity.

Also, especially in the case of China, data availability and accuracy issues contribute to projection difficulties. For example, it was determined last summer that China maintains huge grain stock levels, orders of magnitude larger than analysts had been using for years in their supply and demand tables for China. The fact that China maintains grain stock levels large enough to satisfy many months’ worth of use, speaks volumes about their general commitment to food security/self-sufficiency issues.

Ninety-five percent of the world’s population lives outside the United States, which does not mean that the United States can view the rest of the world as a never-ending reservoir of willing export customers. As per-capita incomes and availability to pay increase over time, so does the agricultural productive capacity of importing countries and our export competitors.

American agriculture is affected by rightward shifts of two supply curves. One is the domestic aggregate supply curve (fueled by technologies that increase crop yields and productive capacity) and the other is the foreign aggregate crop supply curve (which shifts rightward with expansion in planted area of productive cropland in several areas of the world and yield enhancing technologies). When the foreign supply curve shifts to the right faster than foreign demand, U.S. exports stagnate. Except for weather induced gyrations and when U.S. political decisions or events provide a multiyear stimulus to exports, there are relatively long time periods when major-crop export demand remains flat or increases at a slow rate. Indeed, in the case of major crops, rather than being the engine that drives U.S. agricultural prosperity, exports are often part of the reason that total crop demand shifts rightward more slowly than supply. Export demand did not grow at the expected rate following passage of the 1996 Farm Bill. If agricultural producers and consumer respond to the lower prices by sharply cutting back on the quantity supplied and/or greatly increasing the quantity demanded, the market will self-correct, easily overcoming a lack of growth in exports or any other exogenous shock that might beset agriculture.

Current Price Responsiveness of U.S. Crop Agriculture

There are a number of reasons to believe that crop agriculture might be more price-responsive now than in decades past. For one thing, most of the inputs used in crop production are supplied from outside the farm and must be purchased. Items such as fertilizers, herbicides, fuel, and seed are now purchased from off-farm sources rather than depending on livestock manure for fertilizer, using homegrown oats and hay to fuel the real horsepower, using cultivators and hoes to eliminate weeds, and using seed saved from last year’s crop. Also, the number of commercial farmers had dropped from two million to a few hundred thousand farmers/businessmen. For these and other reasons (even before the 1996 Farm Bill was passed), it seemed reasonable to expect farmers to be more responsive to general farm price levels than when farm programs were first introduced. But with the passage of the 1996 Farm Bill expectations were even higher. With the 1996 Farm Bill’s planting flexibility and decoupled payments, farmers could finally plant for the market, adjusting crop mix as needed and, if all prices are in a tailspin, reduce total production.

Figure 3 displays data for total acreage of corn, soybeans, wheat, and cotton and for three measures of prices or per-unit revenues for the four crops for crop years 1996-2000. Data for all variables are converted to an index with 1996 equaling 100. Acreage for the four major crops remained nearly constant over the period. In fact, acreage in 2000 slightly exceeded acreage in 1996. This constancy of acreage occurred despite a 40 percent drop in the index of prices for the four crops between the 1996 and 2000 crop years.

![Figure 3: Composite indices of four crop (corn, cotton, soybeans, and wheat) acreages and various measures of price (1996=100)](image-url)
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American agriculture is affected by rightward shifts of two supply curves. One is the domestic aggregate supply curve (fueled by technologies that increase crop yields and productive capacity) and the other is the foreign aggregate crop supply curve (which shifts rightward with expansion in planted area of productive cropland in several areas of the world and yield enhancing technologies). When the foreign supply curve shifts to the right faster than foreign demand, U.S. exports stagnate. Except for weather induced gyrations and when U.S. political decisions or events provide a multiyear stimulus to exports, there are relatively long time periods when major-crop export demand remains flat or increases at a slow rate. Indeed, in the case of major crops, rather than being the engine that drives U.S. agricultural prosperity, exports are often part of the reason that total crop demand shifts rightward more slowly than supply. Export demand did not grow at the expected rate following passage of the 1996 Farm Bill. If agricultural producers and consumer respond to the lower prices by sharply cutting back on the quantity supplied and/or greatly increasing the quantity demanded, the market will self-correct, easily overcoming a lack of growth in exports or any other exogenous shock that might beset agriculture.

Current Price Responsiveness of U.S. Crop Agriculture

There are a number of reasons to believe that crop agriculture might be more price-responsive now than in decades past. For one thing, most of the inputs used in crop production are supplied from outside the farm and must be purchased. Items such as fertilizers, herbicides, fuel, and seed are now purchased from off-farm sources rather than depending on livestock manure for fertilizer, using homegrown oats and hay to fuel the real horsepower, using cultivators and hoes to eliminate weeds, and using seed saved from last year’s crop. Also, the number of commercial farmers had dropped from two million to a few hundred thousand farmers/businessmen. For these and other reasons (even before the 1996 Farm Bill was passed), it seemed reasonable to expect farmers to be more responsive to general farm price levels than when farm programs were first introduced. But with the passage of the 1996 Farm Bill expectations were even higher. With the 1996 Farm Bill’s planting flexibility and decoupled payments, farmers could finally plant for the market, adjusting crop mix as needed and, if all prices are in a tailspin, reduce total production.

Figure 3 displays data for total acreage of corn, soybeans, wheat, and cotton and for three measures of prices or per-unit revenues for the four crops for crop years 1996-2000. Data for all variables are converted to an index with 1996 equaling 100. Acreage for the four major crops remained nearly constant over the period. In fact, acreage in 2000 slightly exceeded acreage in 1996. This constancy of acreage occurred despite a 40 percent drop in the index of prices for the four crops between the 1996 and 2000 crop years.

![Figure 3. Composite indices of four crop (corn, cotton, soybeans, and wheat) acres and various measures of price (1996=100)](image-url)

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It can be argued that the loan rates are the supply inducing prices since farmers receive loan deficiency payments (LDP) to offset price levels below loan rates. When loan deficiency payments are included, average per-unit revenue for the four crops shows a decline of 30 percent. While economists usually argue that fixed contract payments have no influence on output decisions, many farmers and farm groups believe market prices and government revenue are perfect substitutes. If, in addition to market price and loan deficiency payments, the per unit revenue equivalent of fixed production contract or AMTA payments and emergency Marketing Loss Assistance (MLA) payments are added, then revenue per unit declined by 22 percent between 1996 and 2000.

So depending on which per-unit revenue measure is used to govern farmers’ acreage decisions, “prices” have declined 40 percent, 30 percent, or 22 percent, but total acreage has held constant. Therefore the corresponding supply curve is vertical. Adding in barley and oats would show only a slight reduction in total acreage.

Planting flexibility has enhanced farmers’ ability to vary crop-mix in response to changes in relative crop prices (or per-unit revenues). However, “planting for the market” does not result in a significant reduction in total crop output when prices plummeted.

Analysts, farmers, and farm groups who vigorously argued that farmers would reduce production as needed in response to market price signals are now saying that the reason farmers did not cut back was because, with government payments added into the equation, farmers’ per-unit revenues are above variable costs of production. That explanation seems to suggest that the aggregate crop supply curve is kinked at the price equal to the per-unit variable cost (vertical for all prices above the variable cost and with a, presumably, highly elastic slope below that price). However, economic theory says producers should not produce when the price is below the variable cost of production. Thus, following economic theory, the implied supply curve would end at the “kink”. So, are those who believed in the past that farmers would cut back aggregate output as price declines now logically implying that the supply curve is perfectly inelastic?

Actually, anyone who has been in the midst of farmers for any length of time knows that the aggregate crop supply curve extends below the variable cost of production. A farmer will use up his equity, work 40 hours off the farm, or do whatever he can to stay in agriculture as long as possible. If he does go bankrupt, production continues under a new operator whose supply curve may exist at even lower prices.

Contrary to the expectations of many, we have learned that the aggregate crop supply curve continues to be extremely price-unresponsive. While a list of distracting side issues can be brought into the discussion, the fact remains that a 20-40 percent drop in the crop price level resulted in no reduction in the total acreage of the four most important field crops.

**Price Responsiveness of Current Demand**

What about demand? If aggregate crop demand has become sufficiently price responsive, so that buildups in crop inventories disappear quickly when prices drop, then markets could self-correct from the demand side. This increased price responsiveness, when compared to earlier data, could come from a more price responsive food/feed demand, the emergence of a significant industrial demand, and/or because of increased reliance on exports. The export market receives the most attention as the opportunity for a price responsive market. Actually, industrial demand (e.g., using corn to make ethanol) may be one of the most price responsive crop demands, but its demand represents too small a share of total crop demand to have much impact on overall demand responsiveness. Increased concentration of the livestock industry has likely made domestic feed demand less rather than more price responsive. High fixed investments and long-term contracts in the poultry and hog industries tend to diminish their response to changes in corn and soybean meal prices.

This leaves exports as the last hope for increases in the quantity demanded after a price decline. There are two sources of export increases for the United States following a decline in U.S. crop prices: selling additional exports to importing countries and taking exports from our competitors.

The probability of successfully increasing aggregate crop exports to importing countries, solely based on lower prices, is typically very low for two reasons. First, price has relatively little to do with how much our major importing countries consume agricultural products. If our import customers are rich enough to be a major cash-paying customer, they are probably rich enough to have a reasonable well-fed populace that is unresponsive to changes in agricultural prices.
It can be argued that the loan rates are the supply inducing prices since farmers receive loan deficiency payments (LDP) to offset price levels below loan rates. When loan deficiency payments are included, average per-unit revenue for the four crops shows a decline of 30 percent. While economists usually argue that fixed contract payments have no influence on output decisions, many farmers and farm groups believe market prices and government revenue are perfect substitutes. If, in addition to market price and loan deficiency payments, the per unit revenue equivalent of fixed production contract or AMTA payments and emergency Marketing Loss Assistance (MLA) payments are added, then revenue per unit declined by 22 percent between 1996 and 2000.

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Second, the fact that a country is a significant importer of U.S. agricultural products does not mean that it has no interest in producing as much of its own agricultural products as it reasonably can. Experience and common sense tell us that food security and non-price issues are extremely important to many countries. Hence, savings that an importing country may achieve by additional long-term imports of lower-priced agricultural products may not overcome the country’s feeling of “loss” in food self-sufficiency/security from diminishing domestic agricultural production.

Our export competitors seem a more promising source of increased exports, following a sustained decrease in U.S. crop prices. Since they produce more of the export crop than is needed domestically, economic considerations may be of primary importance in setting acreage and production levels.

Export Competitors’ Acreage Response to Lower Prices. Let us begin by looking at how foreign acreage has changed since 1995. According to the USDA’s PS&D database, total foreign harvested acreage for the eight major crops increased nearly 40 million acres between 1995 and 1996. After 1996, foreign acreage trended steadily downward and, by 2000, was 15 million acres below its pre-1996 Farm Bill level. These data are in line with what one might expect. Acreage went up in response to the increased prices of 1995 and has declined with the lower prices of the last three years to below it level before the 1996 Farm Bill. This bodes well for expanding our exports to replace the reduced foreign production. But what if we focus on acreage changes for those countries that tend to be our major export competitors?

Figure 4 shows harvested acreage for the eight major crops for our nine major competitors: Canada, Argentina, Brazil, EU-15, Australia, Pakistan, India, Thailand, and Vietnam. Thirty of the nearly 40-million-acre increase in 1996 foreign harvested acreage came from our competitors. Our competitor’s acreage remained constant in 1997, but then increased significantly each of the next three years, increasing by 11 million acres between the relatively low-price years of 1999 and 2000. The acreage reductions occurred in countries that are neither major export competitors nor are currently sizable markets for U.S. agricultural exports.

Brazil, Argentina, and EU-15 are three of our leading export competitors (Brazil for soybeans, Argentina for soybeans and corn, and EU-15 for wheat). Brazil’s harvested soybean acreage has increased 17 percent since the first year of the 1996 Farm Bill, while U.S. nominal prices have declined by 40 percent (Figure 5). The Brazilian soybean export price decreased by 32 percent, while the Brazilian soybean export price adjusted for exchange rate and inflation was down about 3 percent (Figure 6).
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Figure 4. Gain/loss in harvested acres compared to 1995. The nine major competitor countries include Canada, European Union (15), Brazil, Argentina, Australia, India, Pakistan, Thailand, and Vietnam.

Figure 5. Brazilian acreage and U.S. price indexed (1996=100).
Argentina’s soybean acreage increased over 60 percent between 1996 and 2000, while Argentina’s soybean prices declined 32 percent nominally and 23 percent in real terms (Figure 7). Clearly, in the case of both Argentina and Brazil, U.S.-engineered price reductions did not sufficiently offset other forces affecting the level of soybean acreage. In fact, especially in Argentina, soybean acreage actually accelerated during the time when soybean prices were at levels not seen in decades (Figure 8).

Figure 7. Argentine harvested area for soybeans, nominal price, and adjusted price (1996=100). Nominal price is export price posted by Abiove (Brazilian Vegetable Oil Industry Association). Adjusted price is adjusted for changes in exchange rate and inflation.

Figure 8. A comparison of Argentine surplus soybean complex (soybeans, soybean meal, and soybean oil) production and exports (thousand metric tons). Also, included is the harvested area (thousand hectares) and yield (metric tons per hectare). Exports = vertical bars. Surplus production is the line that traces the top of the bars. The line through the middle of the bars is acreage devoted to soybean production. The right-hand scale is for yield measured in metric tons per hectare. Argentina has been expanding its soybean area at a steady pace since the mid-1970s. Variability in exportable production is directly related to yields.

Of course, increased acreage does not necessarily mean increased exports of soybeans and soybean products. The bars in Figure 8 depict the difference between Argentine soybean production and domestic use of soybeans and soybean products in thousand metric tons. Argentine demand
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for soybeans and products (not shown in Figure 8) has a steady upward trend with relatively little variation about the trend. The line in Figure 8 that typically touches the tops of the bars is Argentine soybean and soybean product exports in thousands of metric tons. Hence, Argentina's recent increased soybean production was not funneled only into domestic demand. Rather (just like other years since the early 1970s), exportable surplus tends to be totally exported, leaving ending stocks relatively low and stable. Yearly variation in exportable surplus and exports is primarily due to yield variation, not variation in acreage or domestic demand. Yield is the upper most line graph in Figure 8. Brazil also tends to export its exportable surplus of soybeans and soybean products (Figure 9).

Figure 9. Brazilian soybean complex (soybeans, soybean meal, and soybean oil) surplus production, exports, and ending stocks. The bars show surplus production. The top line is exports and the bottom line is ending stocks (thousand metric tons).

We must consider all implications of the export-all-exportable-surplus phenomenon that characterizes our major export competitors but not us. Notice what cannot be seen in these graphs. Clearly, for the 30 years shown in the figures, soybean prices have been low and high, Argentine exchange rates have been favorable and unfavorable, and U.S. set aside levels have been in effect and not in effect. When acreage increases at a relatively constant rate while annual surpluses are exported, how does one make a case that Argentine or Brazilian behavior is influenced by U.S. soybean prices, set aside levels, or exchange rates? I know of three separate attempts by university researchers to "prove" that "if we don't produce it, somebody else will." As is easily predictable from data such as these, none of the studies was successful. Yet, farm groups and farmers continue to recite the assertion. It should be clear by now that our competitors will produce no matter what, period.

The European Union is another case in point. Much of the discussion surrounding the 1985 Farm Bill concerned the need to lower U.S. support prices to regain wheat export market share from the EU. It was assumed that making EU's export subsidies and other farm programs more expensive would bring the EU "to its knees". Well, wheat prices have gone from $4.00 per bushel in 1980 with the help of government price supports and supply control to under $2.50 per bushel in recent years but the EU is still standing. Between 1996 and 2000, a time when U.S. wheat prices declined 40 percent, EU's wheat acreage increased seven percent (Figure 10). We are now told that in the years ahead the EU will be able to compete in the wheat export market, even at recent low prices, without the need for export subsidies.

Figure 10. Area in European Union devoted to wheat production and U.S. price for wheat (1996 = 100).
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![Graph showing soybean production and exports](image)

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Exports During Declining Prices. Given all the considerations discussed, generally how have exports performed during more export-oriented farm policy of the last quarter century and specifically how exports have fared during the declining prices of the last years. Figure 11 shows the U.S. experience with domestic demand and export demand for all grains and seeds as defined by the USDA's PS&D database since 1961. The data are shown in index form with 1979 equaling 1.0. Also, for comparison U.S. population is also shown indexed so 1979 equals 1.0. This figure shows a number of things. The 1970s multi-year burst in exports—the last of the three multi-year ramp-ups in crop exports during the twentieth century is evident as is the steady upward growth in domestic demand since the mid-1970s. In fact, domestic demand (includes industrial as well as food and feed demands) has increased faster than U.S. population since 1979.

Figure 11. Growth in U.S. population, domestic demand for grains and seeds, and exports of grains and seeds, 1961-2000 (1979=1).

Note especially what has happened to export demand since 1979. By 1983, exports of all grains and seeds had fallen to about 80 percent of its 1979 level. Exports have varied around the 80 percent mark ever since. While there are many factors influencing grain and seed export, clearly policies to ensure that the United States is not pricing our grains "out-of-the-market", beginning with the reduction of loan rates in the 1985 Farm Bill and culminating with the replacement of non-recourse loans with marketing loans in the 1996 Farm Bill, have not conquered a two-decade stagnation of grain and seed exports. Of course, had support prices not be lowered and if the marketing loan rate had not been introduced, exports would likely have been lower yet during this period. But driving down prices to below the full-cost of production is of no help to farmers if export volume and market profitability do not improve somewhere down the line. Clearly over the two-decade period, which includes a wide range of macroeconomic conditions, export quantities have been nearly the same regardless of whether prices are high (e.g., mid-1990s) or low (e.g., the last three years).

A commodity-by-commodity analysis shows the same pattern. Corn, for example, has shown a steady growth in domestic demand since the mid-1970s, increasing from four billion bushels in 1976 to nearly eight billion bushels in 2000, while exports have hovered around two billion bushels for the full 25-year period (Figure 12). Soybeans have shown some export growth during the last 25 years, and appear more price-responsive than exports of corn and other grains. For example, soybean exports during the last three years have increased 10 percent, while soybean prices have dropped 40 percent. However, a price inelastic soybean export demand is still suggested but not proven since there are a myriad of unaccounted for influences. But even slight increases in the quantities exported during the last few years have not slowed the downward trend of U.S. soybeans' share of the world export market (Figure 13). Wheat exports and domestic demand trends are shown in Figure 14. Even with the lower prices since 1985, wheat has been unable to match the export levels of the 1970s and early 1980s.

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Policy Implications

Perhaps the 1996 Farm Bill would have been heralded as a stroke of genius had crop exports increased at the rates projected at the time the Bill was passed. Prices would have been strong, farmers would have experienced increased net incomes from greater market receipts plus government payments, agribusinesses would have large volumes of inputs to sell and outputs to process and transport, and taxpayers would have a decline in government program expenditures over the length of the Bill.

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But now we know legislation like the 1996 Farm Bill does not work. Are we going to continue to use ad-hoc-clean-up-the-mess-after-the-crash type farm and special legislation or are we going to recognize, even celebrate, our sustained tendency, because of continuing and largely publicly supported new technologies, to expend agricultural output faster than it can be utilized at profitable prices? Are we going to recognize that promising


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1. A total world demand for aggregate agricultural products that is likely less priceinelastic than U.S. domestic demand is highly inelastic nonetheless.

2. An oligopolistic international grain market structure.

3. Domestic demand represents a large share of total demand for most U.S. major crops so export demand price elasticity must be very large to offset the highly inelastic domestic demand.

4. Importing countries generally prefer to import less rather than more agricultural products so lower prices neither materially increase consumer demand nor reduce indigenous production.

5. Our export competitors are just as committed to the export market over the long haul as we so lower prices tend to have minimal impact on total area planted to major crops.

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But now we know legislation like the 1996 Farm Bill does not work. Are we going to continue to use post-hoc-cleanup-the-mess-after-the-crash type farm and special legislation or are we going to recognize, even celebrate, our sustained tendency, because of continuing and largely publicly supported new technologies, to expand agricultural output faster than it can be utilized at profitable prices? Are we going to recognize that promising
that export growth “will make it all better real soon now” demolishes our credibility? Can we fashion a policy that encourages innovation and technological advances but, borrowing from the perspective of another industry, does not idly stand by while output-increasing new technologies are applied to all industry plants for three eight-hour shifts for every day of the year despite prices that have been driven to below the cost of production? Can we look to other areas besides exports for potential demand growth?

The commodity portion of a farm policy that recognizes the nature of aggregate major-crop markets should include a number of key elements. With nearly vertical supply and demand curves, random shifts due to weather-based yield fluctuations in the United States and/or abroad can cause wide price fluctuations. A farmer-owned-buffer-stock program can be used to truncate the low and high tails of the price distribution. Even moderate reductions in short-term price fluctuations would ensure that the U.S. crop industry is a dependable supplier to domestic livestock producers and other domestic and international grain and oilseed customers.

Recognizing that public investment in “agricultural overproduction capability” is a good thing, mechanisms should be put into place to hold excess productive capacity in reserve in various short-term and longer-term forms. Recognizing that domestic demand, not export demand, has been the source of demand growth for the last quarter century, policy incentives and market development expenditures should focus on existing and potential domestic sources of demand growth. Use of major crops to produce industrial and energy products already represents a significant part of demand growth for major crops. New crops that have potential to provide energy feedstock to electric utilities, for example, could provide farmers with an alternative to major crops, which could provide a new income source and, since some major crop acreage would be displaced, provide higher prices and incomes for major crops.

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